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**Parenting and child externalising behavioural problems: an exploration of the
role of parental cognitions and characteristics**



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Submitted in part fulfilment of the degree of Doctorate in Clinical Psychology

University of Edinburgh

September 2018

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Dedication

I would like to dedicate this thesis to my mum, Patsy Gillies. I could not ask for a kinder, more thoughtful and selfless mum, who has put my needs before her own and been the best granny to my boys who adore her.

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If it takes a village to raise a child, then the same can be said of writing a thesis.

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Research Portfolio Abstract

Background/Aims: Understanding predictors, moderators and mediators of child externalising behaviour problems could lead to improvements in engagement and outcomes for children and their families. Parental cognitions, including self-efficacy and attributions, have been proposed as mediators in the relationship between parenting and child behaviour problems. Although mediation is increasingly recognised as an effective way of examining relationships between variables, only a small proportion of studies that identify potential mediators actually conduct a mediation analysis. This thesis consists of two studies: a systematic review (Journal Article 1) and an empirical study (Journal Article 2). The systematic review investigated the ways in which mediation analysis has been used to examine the role of parental cognitions in studies of child behavioural problems, and to assess the methodological quality of these studies. The empirical study investigated the role of parental cognitions and characteristics in relation to pre-school child externalising behaviour problems.

Methods: In Journal Article 1, a systematic search of three electronic databases, a quality assessment of included studies, and a subsequent narrative synthesis were conducted. In Journal Article 2, 125 parents of children aged 3-6 years old attending a community-based parent management training programme, across three local authorities, completed a battery of self-report questionnaires before and after the intervention. Correlational and mediation analyses were conducted to investigate relationships between child behaviour and parental attachment style, metacognition, dysfunctional attributions and parental stress. We also tested the possibility that

parents' reported levels of stress and child behaviour problems, and their demographic variables, played a role in whether they completed the intervention.

Results: In Journal Article 1, after screening, 14 studies were reviewed using an adapted quality criteria tool. The most commonly studied parental cognition was parental self-efficacy, with a small number of studies investigating parental attributions. A variety of approaches to mediation analysis had been used and caution should be exercised when interpreting the results of many of the reviewed studies. Despite a growing recognition of the limitations of some traditional methods (e.g. causal steps approach), research into mediators of child externalising behaviour could be improved by a wider adoption of more appropriate tools, in line appropriate theoretical frameworks. In Journal Article 2, as hypothesised, the results indicated significant relationships between parents' attachment insecurity and baseline levels of parental stress, parental attributions and child behaviour problems. Support was found for the hypothesis that parental attributions mediated the relationship between attachment insecurity and child externalising behaviour problems. We did not find significant that any demographic variables other than parent age predicted whether parents completed the programme.

Conclusions: Taken together, the two studies provide evidence of a complex relationship between parental factors, particularly parental cognitions, and externalising child behaviour problems. The systematic review found some evidence that parental cognitions mediate how aspects of parenting (e.g. behaviour and affect) and child externalising behaviour problems are associated, and the empirical study also showed that parental attributions are important in relation to child behaviour problems. Of particular interest was the finding that they mediate the relationship

between child behaviour problems and attachment insecurity. However, to advance the field both theoretically and clinically, future studies should endeavour to ensure adequate sample size and power, using optimal study designs, in conjunction with strong theoretical grounding. Exploring cognitive mediators beyond self-efficacy, such as parental attributions, will allow us to further develop our understanding of the relationship between child behaviour and parenting.

Full portfolio word count (excluding appendices and references): 20, 708.

Research Portfolio Lay Summary

Parents make judgements about their children's behaviour called "parental attributions". Research suggests that these thoughts affect how parents act and feel in response to their children which, in turn, influences future child behaviours. For example, parents may wonder whether they are the cause of their child's behaviour and if the child is responsible or to blame for certain misbehaviours. Understanding how factors like these impact on young children's behaviour problems (such as aggression and disobedience) may help researchers, policy-makers and services work out how best to support parents. One important aim is to help parents keep attending parenting groups aimed at improving their relationships with their children. This, in turn, may help improve children's behaviour, and reduce parents' stress.

In our first study, we looked at how researchers have examined the relationship between parents' thoughts and their children's behaviour. Many researchers have investigated parents' beliefs about their ability as parents, but few have investigated parents' judgements about their children's behaviour. A range of statistical approaches of varying quality had been used and future research could be improved by using more sophisticated methods.

We carried out a second study of parents of children aged 3-6 years, who attended community-based parenting groups, across three local authorities. One hundred and twenty-five parents completed questionnaires before and after their 14-week-long group programme. We did not find that parents' reported levels of stress and child behaviour problems, or their demographics (such as the parent and child's gender or the parent's marital status), were statistically linked to whether parents managed to finish the programme. However, we found that child behaviour

problems were related to a number of parent factors (including stress and different kinds of thought patterns). We also found that the statistical association between child behaviour problems and “parental attachment style” (the kind of relationship a parent has with those close to them, including their own parents) could be partly explained by whether parents blamed their child for misbehaviour.

Future studies should try to ensure enough parents take part so that we can be more confident of the findings. More fathers should also be included so that research is not only based on information from mothers. Research like this must be based on strong theory to guide the interpretation of the findings. Looking at a wider variety of parent thoughts such as parental attributions will allow us to further develop our understanding of the relationship between child behaviour and parenting.

Journal Article 1: Systematic Review

A systematic review of the role of parental cognitions: Mediators between parenting and child behavioural problems^a

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A systematic review of the role of parental cognitions: mediators between parenting and child behavioural problems

Abstract

Background: Mediators are intervening variables which account for *how* or *why* two other variables are associated. Parental cognitions, including self-efficacy and attributions, have been proposed as mediators in the relationship between parenting and child behaviour problems. Although mediation is increasingly recognised as an effective way of examining relationships between variables, only a small proportion of studies that identify potential mediators actually conduct a mediation analysis.

This systematic review investigated how mediation analysis has been used to examine the relationship between parental cognitions, child behaviour problems and parenting.

Methods: An initial search of three databases—MedLine, EMBASE, and PsycINFO—produced 644 publications. Of these, 14 studies, published between 1999 and 2017, met the selection criteria of studies that had used mediation analysis.

Results: While parental self-efficacy was a frequently investigated mediator, other cognitive variables, such as parental attributions, have received less attention. The majority of reviewed studies found that self-efficacy mediated the relationship between parenting characteristics/behaviours and child behaviour problems.

Although four studies looked at parental attributions, only one investigated it as a mediator, finding it to mediate the relationship between parenting and child behaviour problems.

Discussion: While more robust methods of mediation were increasingly used over time, to advance the field both theoretically and clinically, consideration should also be given to ensuring adequate sample size and power, using optimal study designs, in

conjunction with strong theoretical grounding. Exploring cognitive mediators beyond self-efficacy, such as parental attributions, may allow us to further develop our understanding of the relationship between child behaviour and parenting.

Key words: parental cognitions, parental self-efficacy, parental attributions, mediation, child externalising behaviour problems

Word count: 9, 729.

Introduction

Half a century ago, Bell's (1968) seminal work highlighted a bidirectional parent–child relationship, where children and parents both influence each other through patterns of continuous, reciprocal adjustment (Bell 1968; Bell and Harper 1977; Belsky 1984), and are active participants who shape their social environments (Bell 1968; Bell and Harper 1977; Belsky 1984; Lytton 1990). Similarly, Patterson's (1982) coercion theory described early caregiver–child interactions in terms of coercive cycles of escalating, mutual, negative reinforcement between parents and children. Such interactions within the family influence patterns of relating with others (e.g. peers and teachers) (Pearl et al. 2014) and are, therefore, a key risk factor for development and maintenance of externalising behaviour problems in children, as well as more serious forms of antisocial behaviours in later development (Loeber and Dishion 1983; Patterson 1982; Patterson et al. 1992; Shaw and Bell 1993).

Bell (1968) proposed that statistical associations between parenting or family characteristics and child behaviour could come from children's effects on their parents as well as from parental influences. Since then, numerous cross-sectional, correlational and longitudinal studies have examined bidirectional models of different elements of parenting and child functioning (Pearl et al. 2014). They recognised that, in order to conclude causal inference, it is necessary to use strategies—often using longitudinal data—that determine the direction of effects (for reviews see Paschall and Mastergeorge 2016; Rutter 2000). However, reciprocal processes are generally considered to be the most likely explanation for the link between parenting and child externalising behaviour problems, highlighting the

importance of looking at both parent-driven and child-driven effects (MacKinnon et al. 1990; Patterson et al. 1992).

When studying interventions, it is important to look closely at the mechanisms of change that underlie any effects (Kraemer et al. 2002; La Greca et al. 2009). Researchers have highlighted the value of exploring mediators in understanding how and why interventions work, and uncovering processes of change and development in child mental health and well-being (Kazdin and Nock 2003; Weersing and Weisz 2002). However, while there is some evidence to suggest that mediation of treatment outcome is a growing research area in the parenting field (e.g. Kazdin and Nock 2003; Kraemer et al. 2002; Weersing and Weisz 2002), only a small proportion of studies that identify potential mediators actually conduct a mediation analysis (Hinshaw 2002; Kraemer et al. 2002). This is primarily due to small sample sizes, low statistical power, and limited, single methods of data collection such as parental self-report questionnaires (Hinshaw 2002; Weeland et al. 2017).

A mediator is an intervening variable which accounts for *how* or *why* two other variables are associated (Baron and Kenny 1986). Embedded in theory, mediation analyses and models have been used by researchers to explain causal relationships. For example, it has been used to investigate hypothesised working mechanisms of an intervention (Gardner et al. 2010), as well as to explore the role of environmental factors (e.g. supportive parenting) in the relationship between developmental processes (e.g. children's effortful control) and later developmental outcomes (e.g. externalising behaviour and social competence; Spinrad et al. 2007). However, Selig and Preacher (2009) warn that using statistical results from a

mediation model are insufficient to claim causality, highlighting the importance of also using theory and previous research to guide interpretation of findings. See Preacher and Hayes (2008) for further details regarding mediation.

An extensive body of literature demonstrates a strong and reciprocal relationship between parental cognitions, parenting affect and behaviour with child adjustment (Bugental and Johnston 2000; Sacco and Murray 2003; For a review see Colalillo and Johnston 2016). Although parenting practices are assumed to be the key mechanism of change in parent management training (PMT), and have begun to be studied as a possible mediator (Forehand et al. 2014), parental cognitions are another mechanism that could affect the development of child conduct problems (Park et al. 2016). As this review is primarily concerned with those mediators that are related to parental cognitions, other mediators such as positive parenting behaviour and negative parenting behaviour (e.g. Hanisch et al. 2014; Katzmann et al. 2017; Park et al. 2016; Rimestad et al. 2017; Seabra-Santos et al. 2016), affective reactions (Sacco and Murray 2003), parental stress (Kötter et al. 2010), and parental psychopathology (i.e. depression and/or anxiety; Hanisch et al. 2014; Jackson et al. 2009; Jackson and Huang 2000; Jackson and Scheines 2005), are beyond the scope of this review, and will not be discussed further. Extensive research demonstrates that parent's cognitions can relate to their attitudes, beliefs, expectations, and perceptions related to their children, their parenting role, and/or themselves (e.g., self-esteem, self-efficacy) (Hoza et al. 2000; Jones et al. 2015).

According to social cognitive theories, parents judge the intentions behind their children's behaviour. These judgements are called attributions and are thought to determine the parents' responses which, in turn, determine future child behaviours

(Dix et al. 1986). Whilst attribution theory can help to consider parent's beliefs about the causes of their child's behaviour and how they respond to such behaviour (Heider 1944; Miller 1995), Bandura's (1977) social learning theory provides a framework to consider parent's cognitions regarding their own effectiveness as a parent.

Notably, most studies examining parent's attributions have used cross-sectional designs or only examined one direction of influence. On the other hand, studies examining parental self-efficacy (a parent's belief in their competence in their parenting role; Coleman and Karraker 2003), have used more robust research methods such as mediation analysis (Hinshaw et al. 2000; Rimestad et al. 2017; Seabra-Santos et al. 2016).

Several authors have called for research that uses statistical mediation, including studies in real world settings, in order to evaluate mechanisms of change (e.g. Kazdin and Nock 2003; Weersing and Weisz 2002). Therefore, the purpose of this systematic review was to investigate the ways in which mediation analysis has been used in studies exploring both child behavioural problems and parental cognitions, and to assess the methodological quality of these studies.

Method

Study Design

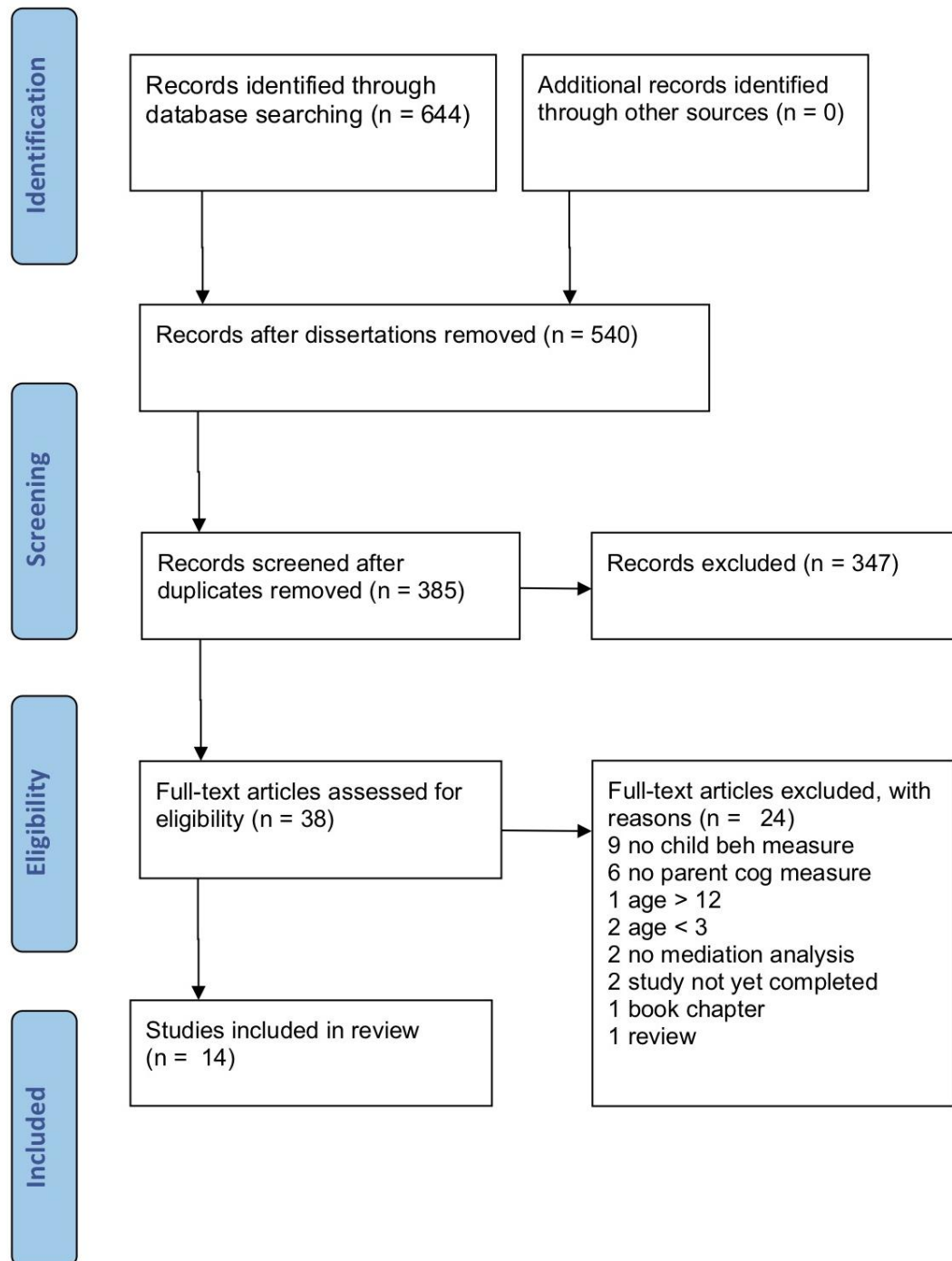
This systematic review was designed to identify, evaluate and synthesise the findings from studies that used meditational analysis to investigate the effects of the relationship between parental cognitions and children's externalising behaviour. The protocol for this review was registered with the PROSPERO international prospective register of systematic reviews (CRD42017075417). A copy of this protocol can be found in Appendix 1. This review conforms to recommendations in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al. 2009).

Search Strategy

A comprehensive search in key databases was conducted prior to the review to ensure that no other review on this topic had already been completed. In January 2018, a systematic search for studies published in peer-reviewed journals was conducted in three online databases within the OVID online search portal: PsycINFO (1806-2018), EMBASE (1974-2018) and MedLine (1946-2018). No date limit was used, and unpublished dissertations, conference abstracts, reviews, editorial publications, books and book chapters were not included. Using combined keywords, a tailored search strategy was informed by a range of related systematic reviews covering studies of parent cognitions (Colalillo and Johnston 2016; Wittkowski et al. 2017) and child externalising behaviour (Michelson et al. 2013), as well as studies that had used a mediation analysis (Buckley 2017; Forehand et al. 2014; Lee et al. 2015; van Stralen et al. 2011). Reference lists of the identified papers and the review

articles mentioned above, as well as articles by leading authors in the field of parenting intervention, were also screened for studies that met inclusion eligibility. Following Forehand et al. (2014), these leading authors included Barkley, Eyberg, Kazdin, McMahon, Patterson, Sanders, Sandler and Webster-Stratton. The search strategy and its results are depicted in Fig. 1. The full search strategy, including search terms, can be found in Appendix 2.

Fig. 1 Schematic review of paper selection, based on PRISMA guidance (Moher et al. 2009).



Study Selection

Based on the inclusion and exclusion criteria (see below), the first author selected and screened all studies obtained from the systematic search. Another researcher, the third author, independently screened 20% of the titles and abstracts. Only articles meeting the inclusion criteria were retained. Full articles were examined in studies where inclusion or exclusion could not be determined from the abstract. Disagreements between reviewers were resolved by discussion and consensus. The most frequent reasons for exclusion were the absence of a validated measure of a parenting cognition or child behaviour measure, where child behaviour problems were not a primary focus, or studies were primarily related to children with autism, obesity or a particular health condition. In total 14 articles, published between 1999 and 2017, met the inclusion criteria. No additional papers were identified via references of included studies.

Inclusion and Exclusion Criteria

To be included in the review, each study must: (1) be published in a peer-reviewed journal; (2) include at least one parent (of any gender) and both girls and boys, all within the age range of 3–12 years (this age range was chosen to exclude infants, toddlers and adolescents given the particular cognitive, social and emotional development both in the early years as well as during adolescence); (3) use a standardised measure of child externalising behaviour problems; (4) use a standardised measure of parental cognitions; (5) use a formal mediation analysis.

No language restrictions were employed, although only English-language databases were included. Studies written in a language other than English were

translated if considered relevant from the abstract and title (in total, two articles were translated from German).

Studies were included irrespective of design (e.g. intervention or naturalistic observation; longitudinal, cross-sectional or experimental), in order to gain an overview of the types of studies using mediation. Any type of mediation analysis was retained, from those with acknowledged limitations related to lower power or incomplete methods such as the Baron and Kenny (1986) approach and the Sobel (1982) test, to more robust methods such as structural equation modelling (SEM), path analysis, and bootstrapping (see Hayes 2018 and MacKinnon 2008 for comprehensive reviews of the strengths and weaknesses of mediation methods and tests of significance).

Studies were excluded if they: (1) did not identify targeted populations related to child externalising behaviour problems; (2) included infants, toddlers (i.e. children 2 years and younger) or adolescents (i.e. children 13 years and older); (3) related to specialist populations (e.g. parents of children with physical health conditions such as obesity, asthma, cancer), internalising problems (e.g. anxiety), autism spectrum disorder, or other developmental disabilities; and (4) included parents with severe and enduring mental illness (e.g. psychosis or bipolar disorder) or those parents in highly disadvantaged circumstances (e.g. parents who were in prison, were exposed to domestic violence, or abused substances).

Study Quality Assessment

To the author's best knowledge, no suitable guidelines on analyses of mediation were available. Instead, the methodological quality of studies was assessed using an adapted version of the critical appraisal tool (see Appendix 3) originally

developed by Mansell et al. (2013), and subsequently used in recent systematic reviews exploring mediation analyses (Buckley 2017; Lee et al. 2015). This encompasses recommendations highlighted in Vandembroucke et al.'s (2007) "Strengthening the Reporting of Observational Studies in Epidemiology" (STROBE) Statement.

The quality rating measure consisted of eight items, with a score of zero, one or two. Consistent with Buckley's (2017) approach, a score of two was indicative of good methodological quality, indicating several strengths; a score of one indicated adequate methodological quality with some strengths and weaknesses; and a score of zero indicated poor methodological quality with several limitations or important missing information. The first author reviewed each study and the third author reviewed seven of the 14 studies (50%). Inter-rater agreement for quality assessment was excellent (Cohen's Kappa, 0.93). Disagreements were resolved through discussion, then 100% agreement was achieved. In line with recent recommendations (Cochrane Collaboration 2011; Mansell et al. 2013), descriptive summaries have been included of the quality criteria for each paper, since these are considered more meaningful and reliable than total quality scores. The quality assessment items are outlined in Appendix 3. Quality rating scores are presented in Table 4 below.

If a study was missing information but linked to further information (e.g. in a larger trial), these sources were obtained to aid assessment of the study. In other cases where information was missing, the author of the study was contacted to request this information. If this failed to receive a response, no further attempts were made to obtain the information.

For mediation studies, Fritz and MacKinnon's (2007) criteria were followed to ascertain whether the study had adequate power to detect mediation, and for SEM studies Wolf et al.'s (2013) recommendations were used.

Data Extraction, Synthesis and Analysis

Data was extracted according to the proforma shown in Table 1 below.

Table 1 Characteristics of the studies under review

Study	Author(s) Country of Research	Design [Intervention]	Sample Source	Sample size (female child n), [% mothers; % fathers]	Sample Age Child - Range (Mean, SD)
1	Nix et al. (1999) USA	Longitudinal (four-wave)	Community: kindergartens; data from longitudinal research study - Child Development Project	277 (133) [100%; NR]	4-6 years (NR, NR)
2	Jackson and Huang (2000) USA	Cross-sectional	Community: single black mothers, past / present welfare	188 (84) [100%; 0%]	3-5 years (M = 4.7 years, NR)
3	Sacco and Murray (2003) USA	Cross-sectional	Community: mothers of children with ADD or ADHD	86 (16) [100%; 0%]	6-12 years (M = 8.6 years, NR)
4	Feinfield and Baker (2004) USA	RCT. Intervention: Pre-, Post-, Follow-Up (5 months) [Project TEAM - 12 weeks]	Community: families of children with externalising behaviour problems	47: treatment = 24 (5); waitlist 23 (2) [88.2%, NR/<11.8%]	4.3-8.3 years (M = 6.6 years, SD = 1.2)
5	Jackson and Scheines (2005) USA	Longitudinal (two-wave)	Community: single black mothers, past / present welfare	178 (79) [100%; 0%]	5-8 years (M = 6.6 years, NR)
6	Jackson et al. (2009) USA	Longitudinal (two-wave)	Community: single black mothers, past / present welfare	100 (NR) [100%; 0%]	3-5 years (NR, NR)

Study	Author(s) Country of Research	Design [Intervention]	Sample Source	Sample size (female children), [% mothers; % fathers]	Sample Age Child - Range (Mean, SD)
7	Kötter et al. (2010) Germany	Cross-sectional	Clinic/community: mother-child centres; data from prevention programme EFFEKT-E	380 (167) [100%; 0%]	4-7 years (M= 4.7 years, SD =.78)
8	Meunier et al. (2010) Belgium	Longitudinal (two-wave)	Community: kindergartens; part of longitudinal research programme "H2M (Hard-t(w)o-Manage) Children"	340 (151) [100%; 90.3%]	3-5 years (M= 4.11 years, SD = .94)
9	Graf et al. (2012) Germany	Cross-sectional [MonteBaRo-Training - 5 weeks]	Community	124 (52) [77%; 23%]	NR (M= 8.3 years, SD = 2.7)
10	Hanisch et al. (2014) Germany	RCT. Intervention: Pre-, Post-[PEP -10 weeks]	Community: kindergartens; data from RCT of efficacy PEP	155: TG: 91 (23); NTG: 64 (19) [NR]	3-6 years (TG: M= 4.19 years, SD = 0.87; CG: M= 4.16 years, SD = 0.92)
11	Park et al. (2016) Canada	Cross-sectional	Community	148 (74) [100%; 100%]	3-6 years (M= 6.41 years, SD =.36)
12	Seabra-Santos et al. (2016) Portugal	RCT. Intervention: Experimental RC between group (TG; WLC); Pre-, Post-, Follow-Up (12 months, 18 months) [IY -14 weeks]	Clinic/community	124: TG: 68 (19); WLC: 56 (15) [98%; 1%]	3-6 years (M= 6.41 years, SD =.36)

Study	Author(s) Country of Research	Design [Intervention]	Sample Source	Sample size (female child n), [% mothers; % fathers]	Sample Age Child - Range (Mean, SD)
13	Katzmann et al. (2017) Germany	RCT. Intervention: Pre-, 8 weeks after treatment start, Post-, Follow-Up (6 months, 12 months) [BG and NDG Parent Training - 5 month intervention]	Clinic	110: BG: 51 (9); NDG: 59 (11) [96.1%; 3.9%]	4-11 years (BG: M= 7.06 years, SD = 1.89; NDG: M= 7.32 years, SD = 2.09)
14	Rimestad et al. (2017) Denmark	RCT. Intervention: Pre-, Mid-, Post- [IY - 18 weeks]	Clinic/community	64 (15) [100%; 70%]	3-8 years (M= 6.4 years, SD =1.7)
<i>NR</i> Not reported; <i>M</i> Mean; <i>SD</i> Standard Deviation; <i>ADD</i> Attention deficit disorder; <i>ADHD</i> Attention deficit hyperactivity disorder; <i>RCT</i> Randomised Control Trial; <i>PEP</i> Prevention Programme for Externalising Problem behaviour; <i>BG</i> behaviour group; <i>NDG</i> nondirective group; <i>IY</i> Incredible Years. <i>TG</i> treatment group; <i>WLC</i> wait list control					

Results

In total, 14 studies were included in the analysis. Table 1 summarises the characteristics of the studies under review. Studies are arranged chronologically, in order to demonstrate trends in the findings, such as the development of the use of methods for testing mediation.

Study Characteristics

Six of the studies were conducted in the USA, one in Canada, and seven in central Europe (four in Germany, one in Portugal, one in Belgium, and one in Denmark). In the majority of studies ($n=10$), participants were recruited solely from the community. Of the remainder, three studies (Kötter et al. 2010; Rimestad et al. 2017; Seabra-Santos et al. 2016) recruited from both the community and clinics, whilst one study (Katzmann et al. 2017) recruited from a clinic only.

Study sample sizes ranged from 47 to 380 children, with a mean sample size of 145. There was an overall age range of 3 - 12 years, and a child gender distribution of 38% female, 58% male, and 4% unreported. Inclusion criteria for four studies (Feinfield and Baker 2004; Hanisch et al. 2014; Sacco and Murray 2003; Seabra-Santos et al. 2016) required symptoms above clinical cut-off on a validated rating scale relating to child externalising behaviour problems (operationalised as overall externalising symptoms, as well as ADHD and ODD symptoms). In two studies (Katzmann et al. 2017; Rimestad et al. 2017), children had symptoms of ADHD. Two studies (Hanisch et al. 2014; Meunier et al. 2010) were concerned with bidirectional effects between parenting (including parent behaviour and parent cognitions) and child externalising behaviour.

All five intervention studies were RCTs but only four out of these studies adhered to the optimal "full longitudinal" design, as they all had a minimum of three time points of data (Patel et al. 2017). Two of these used a regression framework (Feinfield and Baker 2004; Rimestad et al. 2017), and the other two used Structural Equation Modeling (SEM). The Hanisch et al. (2014) study had two time points (a pre-, post-design) but used an ANCOVA to control for baseline change scores, which has been referred to as a "half longitudinal design" (MacKinnon 2008).

All four of the studies using a longitudinal design used SEM but only one of these had four data time points (Nix et al. 1999) which allowed for the temporal ordering of constructs. The three other longitudinal designs only had two measurement time points. Five of the studies used cross-sectional data, which does not allow temporal precedence to be established and means causation cannot be inferred (e.g. Graf et al. 2012; Jackson and Huang 2000; Kötter et al. 2010; Park et al. 2016; Sacco and Murray 2003).

Parent-reported measures were most often completed by mothers. In five studies (Jackson et al. 2009; Jackson and Huang 2000; Jackson and Scheines 2005; Kötter et al. 2010; Sacco and Murray 2003), only mothers participated (this was in keeping with the stated hypotheses and recruitment strategies). In three studies (Feinfield and Baker 2004; Hanisch et al. 2014; Nix et al. 1999), the number of fathers who had taken part was not explicitly stated. No studies reported exclusively father participants. In one study (Park et al. 2016), participants were entirely made up of mother-father pairs (the stated hypothesis related to mother-father dyads). In two studies (Meunier et al. 2010; Rimestad et al. 2017), there was a high level of father participation (90.3% and 70%, in addition to the 100% of mothers also participating).

In the remaining three studies (Graf et al. 2012; Katzmann et al. 2017; Seabra-Santos et al. 2016), where it was clear that fathers did participate, fathers made up a very small percentage of participants (ranging from 1% to 23%).

Quality Ratings of Studies

Overall the quality of studies was generally good, however, caution was required in interpreting some of the findings of the studies reviewed. One key failing related to statistical power. Only one study (Seabra-Santos et al. 2016) reported a power calculation to inform the required sample size for detecting an effect. Two studies acknowledged that they may be underpowered (Hanisch et al. 2014; Jackson et al. 2009), whilst some others reported that their sample size was adequate to address their primary hypotheses (e.g. Feinfield and Baker 2004; Meunier et al. 2010). Sample size calculations based on Fritz and MacKinnon's (2007) guidelines for mediation studies, Wolf et al.'s (2013) recommendations for SEM, and *post hoc* calculations (Soper 2018) suggested that five studies were underpowered.

In terms of confounding variables, in some studies it was not clear whether variables that may impact on results had been identified and controlled for in terms of design (for example, through sampling methods), nor in the statistical analysis (e.g. Feinfield and Baker 2004; Kötter et al. 2010). While such cases led to a lower quality rating, some papers acknowledged that they had not taken into account potentially important social or ecological factors in their data analyses.

Participants were generally from a population that aligned with the aims and hypotheses of the relevant study. Some studies investigated very specific groups (e.g. three studies recruited single, black mothers from low SES backgrounds in one city) that, while appropriate to the stated aims and hypotheses, may have produced

findings that are not widely generalisable, and did not always account for possible confounding variables related to their sample. Five studies did not state explicit inclusion or exclusion criteria, although it was not clear for some (e.g. Hanisch et al. 2014; Meunier et al. 2010) whether this is because they formed part of a larger trial.

Although the psychometric properties of measures across all studies were generally good, and many of the studies used robust and popular measures such as the Child Behaviour Checklist (CBCL; Achenbach 1991) and the Parenting Sense of Competence scale (PSOC; Johnston and Mash 1989), some subscales demonstrated very poor internal consistency. Also, given some of the child behaviour measures used in studies were based solely on maternal reports (e.g. Jackson and Huang 2000; Sacco and Murray 2003), this did not allow for triangulation with objective assessments of child behaviour which could have ameliorated error in terms of rater-bias and/or shared-method variance. Other studies used multiple informants to ascertain child behaviour problems. For instance, Nix et al. (1999) used mother, father, children's classmates and teacher reports of child aggression, averaged across a four-year time period; Hanisch et al. (2014) and Feinfield and Baker (2004) used teacher and parent report; whilst Park et al. (2016) used mother, father and child self-reports.

All studies reported a broad theoretical framework upon which to base research questions, hypotheses and use of measures (see Table 3), such as Coercion Theory (Patterson 1982) or parental self-efficacy (see Coleman and Karraker 1998 for a review) which is, in turn, based on Bandura's (1982) self-efficacy theory. However, in one study the theoretical premise and empirical evidence for investigating particular mediators was not strong (Feinfield and Baker 2004).

Parent Cognitions

A variety of parent cognition measures were used to investigate different parental cognitions. See Table 2 below for a brief summary of the type of parental cognition measured, including a description of each tool in relation to measures of psychometric properties and the studies that used each measure. Four studies (Katzmann et al. 2017; Nix et al. 1999; Park et al. 2016; Sacco and Murray 2003) were interested in mothers' attributions and eleven studies explored parents' sense of self-efficacy in relation to their children's behaviour problems. Sacco and Murray (2003) explored parent-child relationship satisfaction, while Feinfield and Baker (2004) investigated parent-child relationship problems through a measure of parents' feelings and attitudes toward their children.

Parenting self-efficacy / parenting competence

Whilst self-efficacy relates to a person's belief in their ability to perform a particular task successfully (Bandura 1982), parental self-efficacy (PSE) refers to a parent's beliefs in their ability to effectively manage the different responsibilities related to their parental role (Jones and Prinz 2005). See reviews by Coleman and Karraker (1998); Jones and Prinz (2005); and Wittkowski et al. (2017) relating to PSE.

Studies reported on parent's sense of competence or self-efficacy: nine used measures of parents' self-efficacy, two used a measure of general self-efficacy, one study measured satisfaction with their parenting role and one study measured parent-perceived problems in the parent-child relationship; whilst four measured parent's attributions regarding their child's behaviour. The most frequently used measure was the Parenting Sense of Competence scale (PSOC; Johnston and Mash 1989; n=5).

Across the five studies the scale was found to have acceptable psychometric properties (Cronbach's α ranged from: .75 - .79 for satisfaction, .69 - .79 for self-efficacy, and .65 - .83 for total competence). The other measures of self-efficacy included: the Self-Efficacy Scale (SEFS; German adaptation of the PSOC and Parenting Task Index; Hanisch et al. 2014), the Parenting Self-Efficacy Scale (Jackson et al. 2009), Echelle globale du sentiment de competence parentale (EGSCP; Meunier et al. 2010), the German version of the Questionnaire of Self-Efficacy (QSE; Katzmann et al. 2017), and the Mastery Scale (n= 2; Jackson and Huang 2000; Jackson and Scheines 2005). See Wittkowski et al. (2017) for a comprehensive review of self-report measures of parental self-efficacy, and a clear explanation and definitions of related constructs.

Parental attributions

Parental attributions can be understood as a parent's causal inference regarding their child's behaviour (Morrissey-Kane and Prinz 1999). Parents' beliefs or explanations about why their children behave or respond in particular ways are argued to act as "interpretative filters" (particularly in relation to negative behaviours) that guide socialisation efforts (Johnston and Ohan 2005; Sawrikar and Dadds 2017). Of particular interest to this review are how parents' attributions for children's misbehaviour are associated with children's behavioural problems (Baden and Howe 1992; Johnston and Freeman 1997).

Parents' attributions were measured using four different tools: The Parenting Possibilities Questionnaire (PPQ; Nix et al. 1999), Parent Attribution Questionnaire (PAQ; Sacco and Murray 2003), Attribution Rating Scale (Park et al. 2016), and the Child-Responsibility attributions subscale of the Parent Cognition Scale (PCS; Snarr

et al. 2009; German version: Katzmann et al. 2017). See Johnston and Ohan (2005) for a discussion of methods for measuring parental attributions.

Table 2 Parental cognitions and measures

Parent cognition	Measure of parent cognition	Source	Reliability (Cronbach's α)	Studies
Parental self-efficacy	Parenting Sense of Competence (PSOC)	Johnston and Mash (1989)	.75 - .79 (satisfaction); .69 - .79 (self-efficacy); .65 - .83 (total)	Feinfield and Baker (2004); Kötter et al. (2010); Graf et al. (2012); Seabra-Santos et al. (2016); Rimestad et al. (2017)
	The Parenting Self-Efficacy Scale	Duke et al. (1996)	.89 (Time 1); .91 (Time 2)	Jackson et al. (2009)
	Echelle globale du sentiment de compétence parentale (EGSCP)	Meunier and Roskam (2009)	.70 (mothers); .80 (fathers)	Meunier et al. (2010)
	Self-Efficacy Scale (SEFS)	Hanisch et al. (2008)	.80	Hanisch et al. (2014)
	German version of the Questionnaire of Self-Efficacy (QSE)	Naumann et al. (2007)	.84 (pre-treatment); .81 (post-treatment)	Katzman et al. (2017)
Self-efficacy	The Mastery Scale	Pearlin and Schooler (1978)	.70	Jackson and Huang (2000); Jackson and Scheines (2005)

Parent cognition	Measure of parent cognition	Source	Reliability (Cronbach's α)	Studies
Parental attributions	The Parenting Possibilities Questionnaire (PPQ)	Nix et al. (1999)	.14 (no affect–no control subscale); .40 (no affect – control subscale); .64 (negative affect – control subscale).	Nix et al. (1999)
	Parent Attribution Questionnaire (PAQ)	Sacco and Murray (2003)	.77 (disorder factor); .74 (responsibility factor).	Sacco and Murray (2003)
	Attribution Rating Scale	Park et al. (2016)	Attributions for negative child behaviours: .83 (mothers); .84 (fathers). Attributions for positive child behaviours: .80 (mothers); .81 (fathers)	Park et al. (2016)
	Child-related responsibility attributions subscale of the Parent Cognition Scale (PCS)	Snarr et al. (2009); Katzmann et al. (2015)	.85 (pre-treatment); .87 (post-treatment)	Katzman et al. (2017)
Parent-child relationship satisfaction	Parent-Child Relationship Satisfaction Scale (PCRSS)	Sacco and Murray (2003)	.92	Sacco and Murray (2003)
Parent-child relationship problems	Index of Parental Attitudes (IPA)	Hudson (1982)	.91	Feinfield and Baker (2004)

Child Externalising Behaviour

Measures of child behaviour problems

Ten measures of child behaviour problems were used. The Child Behaviour Checklist (CBCL; Achenbach 1991) is a widely used parent-completed rating scale and was the most frequently used tool to measure children's externalising behaviour problems (n=6). There were several different versions used of the Child Behaviour Checklist and the Externalising Behaviour subscale was commonly utilised (CBCL 1½–5; CBCL 4–18; CBCL 6–18, as well as the German version) at home, based on mother and/or father reports (n=4; Hanisch et al. 2014; Katzmann et al. 2017; Nix et al. 1999; Park et al. 2016), and at kindergarten/school (Nix et al. 1999). Other measures that were used included the Eyberg Child Behaviour Inventory (ECBI; Eyberg and Ross 1978; n=2; Feinfield and Baker 2004; Rimestad et al. 2017), the Behaviour Problems Index (n=3; Jackson et al. 2009; Jackson and Huang 2000; Jackson and Scheines 2005), Conners Parent Rating Scale: Hyperactivity (HI) and Conduct Problems (CP) Subscales (CPRS; two subscales: CPRS-HI, CPRS-CP; n=2; Rimestad et al. 2017; Sacco and Murray 2003), Social Behaviour Questionnaire (SBQ; Kötter et al. 2010; Tremblay et al. 1992); Strength and Difficulties Questionnaire (SDQ; n=2; studies Graf et al. 2012; Seabra-Santos et al. 2016); Profil Socio-Affectif (PSA; Meunier et al. 2010); and the Problem Checklist (Hanisch et al. 2014).

Several studies used more than one measure to assess child behaviour, and most of these used subscales rather than the full measure. For example, Hanisch et al. (2014) used the CBCL and two subscales from the Problem Checklist (PCL ADHD;

PCLODD); Rimestad et al. (2017) used the ECBI and the CPRS; and Seabra-Santos et al. (2016) used two subscales from the SDQ (SDQ HS; SDQ CS) and two subscales from the Preschool and Kindergarten Behaviour Scales - Second Edition (PKBS EBS; PKBS SSS). Katzmann et al. (2017) used both the German version of the externalising problems subscale Child Behaviour Checklist (CBCL/4– 18; Arbeitsgruppe Deutsche Child Behaviour Checklist 1998), as well the Diagnosis Checklist for ADHD (DCL-ADHD; Döpfner et al. 2008) and the nine-item Diagnosis Checklist for Conduct Disorders (DCL-CD; Döpfner et al. 2008) regarding problem behaviours of the target child.

Overall quality

Overall measures generally had good psychometric properties (i.e. validity and reliability). However, some of the subscale measures used had poor to acceptable levels of internal consistency. For example, Seabra-Santos et al. (2016) found that the Conduct Problem Scale of the SDQ screening tool had poor internal consistency (Cronbach $\alpha = .46$) and the intra-class correlations for the Child Pro-Social Behavior category of the DPICS was .53. Nix et al. (1999) report that for the PPQ parental attributions measure, across the three subscales had unacceptable to acceptable levels of internal consistency (three items in the “no affect–no control” subscale, Cronbach’s $\alpha = .14$, for the two items in the “no affect – control” subscale, Cronbach’s $\alpha = .40$, and for the four items in the “negative affect – control” subscale, Cronbach’s $\alpha = .64$).

Mediators

Cognition constructs

The reviewed studies reported the use of a range of mediators and mediation analyses to examine the relationship between parenting and child externalising behaviour (See Table 3 below). Studies that investigated parental cognitions included measures related to parental self-efficacy (n=9), parental attributions (n=3), parent-child relationship satisfaction (n=1); and parent-child relationship problems (n=1).

Parental self-efficacy

Parental self-efficacy/sense of competence was the most commonly assessed cognitive mediator across all studies (n=10), and was used in all but one (Feinfield and Baker 2004) of the intervention studies. Feinfield and Baker (2004) did not use a measure of parental self-efficacy as a mediator but rather as part of a composite outcome measure.

In two studies involving the Incredible Years (IY) intervention, an increase in parental self-efficacy (measured using the PSOC) and a reduction in negative parenting were found to mediate improvements in child behaviour where both symptoms of ADHD and conduct problems were present (Seabra-Santos et al. 2016; Rimestad et al. 2017). Kötter et al. (2010) demonstrated that parental self-efficacy (measured using the German version of the PSOC) was a mediator between mothers' depressive symptoms and children's hyperactive behaviour. Two studies involving Jackson found support for general self-efficacy (rather than parental self-efficacy) as a mediator. Jackson and Huang (2000) found that both parenting stress and self-efficacy mediated the relationship between child behaviour problems and parenting

behaviour. Jackson and Scheines (2005) found that self-efficacy mediated the relationship between mothers' parenting behaviour and child behavioural problems. Jackson et al. (2009) found that parental self-efficacy mediated the relationship between mothers' depressive symptoms and child behaviour problems. Meunier et al. (2010) confirmed an indirect effect of children's externalising behaviour on parental behaviour through parents' self-efficacy for both fathers' positive parenting and negative parenting, whereas for mothers this effect was only found for negative parenting. Graf et al. (2012), using the German version of the PSOC, found that *parenting sense of competence* (which includes constructs of parental self-esteem and parental self-efficacy) mediated the connection between perceived child behaviour problems and their expectations regarding a parent training intervention.

In summary, the majority (n=8) studies found that self-efficacy did mediate the relationship between parenting characteristics/behaviours, including maternal depressive symptoms (Jackson et al. 2009; Jackson and Huang 2000; Jackson and Scheines 2005), maternal and/or paternal negative parenting behaviours (Meunier et al. 2010; Rimestad et al. 2017; Seabra-Santos et al. 2016), paternal positive parenting behaviours (Meunier et al. 2010) and child behaviour problems.

Hanisch et al. (2014) looked for evidence that parental self-efficacy was a mediator in the association between PEP treatment and child behaviour but did not find support that parental self-efficacy was a mediator. Similarly, Katzmann et al. (2017) explored whether changes in parental self-efficacy mediated child behaviour outcomes (externalising problems, oppositional-defiant symptoms, ADHD symptoms), while controlling for changes in parenting behaviour, dysfunctional parental attributions, treatment implementation, and pre-treatment child behaviour

symptom scores. They did not find that parental self-efficacy mediated changes in child behaviour problems at post-treatment assessment. As such, the two studies that did not find self-efficacy to be a mediator are the exception. However, interestingly, both Hanisch et al. (2014) and Katzmann et al. (2017) conducted their analyses based on data from only two time points (pre-treatment and post-treatment). This means that their mediators and outcomes were assessed at the same time, thus their analyses are essentially correlational in nature (Sawrikar and Dadds 2017). For intervention studies, in order that changes in a potential mediator can be assessed once the intervention has taken place, but prior to the outcome happening, it is recommended that there are at least three measurement time points (Kraemer et al. 2002; MacKinnon et al. 2007; Preacher and Hayes 2008). Also, Katzmann et al. (2017) suggested that using the same method to explore mediator and outcome variables, as well as limitations in the way they operationalised parenting variables, may have contributed to these findings. See Discussion section for further details.

Parental attributions

One study (Sacco and Murray 2003), that based their analyses on the causal steps approach (Baron and Kenny 1986), did not use attributions as mediators in their mediation analyses because attributions were not found to significantly correlate with child externalising behaviour problems. However, some authors maintain that mediation can still exist even if all four causal conditions are not met (e.g. Patel et al. 2017). See the Discussion section below for a more in-depth consideration of this issue.

The other studies that investigated attributions all used Structural Equation Modeling (SEM) to demonstrate a significant relationship between dysfunctional

parental responsibility attributions (parents' causal explanations of problem behaviour that imply the child is blameworthy; Snarr et al. 2009) and externalising behavioural problems (Katzmann et al. 2017; Nix et al. 1999; Park et al. 2016). However, both the Nix et al. (1999) and the Park et al. (2016) studies made dysfunctional parenting attributions the independent variables, and child behavioural problems the dependent variable. In both these studies parent's negative behaviour was the mediator. Nix et al. (1999) investigated and found that mothers' harsh discipline practices mediated the relationship between mothers' hostile attributions and their child's externalising behaviour problems. Park et al. (2016) found that for both parents (mothers and fathers), harsh parenting mediated the relationship between child-blaming attributions and higher levels of child behaviour problems. On the other hand, Katzmann et al. (2017) found that a reduction in hostile parental attributions was a mediating mechanism for the reduction in child externalising behaviour problems of their children in behaviourally oriented PMT in comparison to the non-behavioural PMT. As such, out of the four studies that included attributions in their study, only one study actually investigated attributions as a mediator (Katzman et al. 2017).

Parent-child relationship satisfaction

Sacco and Murray (2003) investigated factors underlying maternal self-reported relationship satisfaction between mothers and their children (who had symptoms of ADHD). They found that affect and trait perceptions (beliefs about child personality characteristics, rather than child behaviour) fully mediated the association between maternal relationship satisfaction and child hyperactivity, and partial mediation occurred for child conduct problems. They found that maternal

relationship satisfaction was better accounted for by trait perceptions than by attributions, and better by conduct problems than hyperactivity.

Types of mediation analyses and significance testing

There were several different approaches to mediation analysis taken across the studies. These included the regression-based conditions of the classic Baron and Kenny (1986) “causal steps” model (n=3); the Product of coefficient test (also known as the "Sobel test"; MacKinnon 2008; MacKinnon et al. 2007; Sobel 1982) (n=2; Hanisch et al. 2014; Rimestad et al. 2017); Structural Equation Modeling (SEM) (n=10). Of these latter studies, Meunier et al. (2010) incorporated a cross-lagged panel design to test parent-child bidirectional effects.

The significance tests of indirect effects used by studies in this review were: the Sobel test (Sobel 1982), used by two studies (Graf et al. 2012; Meunier et al. 2010) and bootstrapping (Efron and Tibshirani 1993; Shrout and Bolger 2002), used by four studies (Hanisch et al. 2014; Katzmann et al. 2017; Rimestad et al. 2017; Seabra-Santos et al. 2016). For a full explanation of the significance tests of mediation see Hayes and Scharkow (2013), Leth-Steensen and Gallitto (2016) or Preacher and Hayes (2008).

Table 3 Mediator constructs

Study	Authors	Measure of parent cognition	Mediator construct	Measure of mediator	Mediation analysis; Significance test	Cognition Construct	Theoretical Framework
1	Nix et al. (1999)	PPQ	Attributions (hostile)	PPQ	SEM	Attributions (Hostile)	Coercion Theory (Patterson 1982; Patterson et al.1992)
2	Jackson and Huang (2000)	The Mastery Scale	General perceived self-efficacy	The Mastery Scale	SEM, Indirect effects, Path analysis	General perceived self-efficacy	Self-efficacy (Bandura 1982, 1986, 1989, 1997)
3	Sacco and Murray (2003)	PAQ, PCRSS	Trait perceptions; Attributions; Affective reactions	CTRS, PCRSS	Baron and Kenny	Attributions (Disorder/Responsibility)	Attribution Theory; Social-cognitive interpersonal process model
4	Feinfield and Baker (2004)	PSOC IPA	Parent behaviour Child behaviour	APQ, PCRQ	Baron and Kenny	<i>Parental attitude</i> (composite measure)	Coercion Theory (Patterson 1982)
5	Jackson and Scheines (2005)	The Mastery Scale	General perceived self-efficacy	The Mastery Scale	SEM, Indirect effects, Path analysis	General perceived self-efficacy	Social Cognitive Theory, Self-efficacy (Bandura 1997)
6	Jackson et al. (2009)	PSES	PSE	PSES	SEM	PSE	Self-efficacy (Bandura 1995)

Study	Authors	Measure of parent cognition	Mediator construct	Measure of mediator	Mediation analysis; Significance test	Cognition Construct	Theoretical Framework
7	Kötter et al. (2010)	PSOC	Parental competence; Parental stress	PSI; PSOC	SEM, Path model; Baron and Kenny	PSOC	Maternal depression
8	Meunier et al. (2010)	EGSCP	PSE	EGSCP	SEM, Indirect effects; Sobel	PSE	Parental self-efficacy (Bandura 1977; Coleman and Karraker 1998)
9	Graf et al. (2012)	FKE (GV PSOC)	PSOC	FKE	Baron and Kenny; Sobel	PSOC	PSOC
10	Hanisch et al. (2014)	SEFS	Positive Parenting; Dysfunctional Parenting; PSE; Parental Problem Solving; Parental Warmth; Parental Psychopathology	PPS; PS; SEFS; PSBC; CII; DASS	SEM, Product of coefficient; Bootstrapping	PSE	Parental self-efficacy
11	Park et al. (2016)	Attribution Rating Scale	Positive Parenting, Lax Parenting, Harsh Parenting	PCRQ; APQ	SEM	Attributions	Social Cognitive Theory, Attribution Theory (e.g. Werner 2012)
12	Seabra-Santos et al. (2016)	PSOC	PSE; Parenting practices	PSOC; PS	Indirect Effects; Bootstrapping	PSE	Coercion Theory (Patterson 2002)

Study	Authors	Measure of parent cognition	Mediator construct	Measure of mediator	Mediation analysis; Significance test	Cognition Construct	Theoretical Framework
13	Katzmann et al. (2017)	QSE (GV); CRRAS (PCS GV)	Positive Parenting behaviour; Negative parenting behaviour; PSE; Dysfunctional Parental Responsibility Attributions	QPNP PPB QPNP NPB QSE PCS (GV)	SEM; Bootstrapping	PSE; Dysfunctional Parental Responsibility Attributions	Dysfunctional parent attributions (e.g. Bugental et al. 2002; Snarr et al. 2009)
14	Rimestad et al. (2017)	PSOC	Positive Parenting behaviour; Negative parenting behaviour; Appropriate discipline; PSE	PPI POS PAR; PPI NEG PAR; PPI APP DISC; PSOC	Product of coefficient; Bootstrapping	PSE	Parental self-efficacy (Coleman and Karraker 2003; Sanders and Woolley 2005)

PPQ The Parenting Possibilities Questionnaire; *SEM* Structural Equation Modeling; *PAQ* Parent Attribution Questionnaire; *PCRSS* Parent-Child Relationship Satisfaction Scale; *CTRS* Child Trait Rating Scale; *PSOC* Parenting Sense of Competence; *IPA* Index of Parental Attitudes; *APQ* Alabama Parenting Questionnaire; *PCRQ* Parent-Child Relationship Questionnaire; *PSES* Parenting Self-Efficacy Scale; *PSE* Parenting Self Efficacy; *PSI* Parenting Stress Index; *EGSCP* Echelle globale du sentiment de competence parentale; *FKE* (German Version PSOC); *SEFS* Self-Efficacy Scale; *PPS* Parent Practices Scale; *PS* Parenting Scale; *PSBC* Problem Setting and Behaviour checklist; *CII* Coder Impressions Inventory; *DASS* Depression Anxiety Stress Scale; *APQ* Alabama Parenting Questionnaire; *PS* Parenting Scale; *QSE* (GV) Questionnaire of Self-Efficacy (German version); *C-RAS* (PCS GV) Child-related responsibility attributions subscale (Parent Cognition Scale German version); *QPNP PPB/NPB* Questionnaire for Positive and Negative Parenting Practices positive parenting behaviour/ negative parenting behaviour; *PPI APP DISC* Parental Practices Index - Appropriate Discipline subscale; *PPI POS PAR* Parental Practices Index - Positive Parenting subscale; *PPI NEG PAR* Parental Practices Index - Negative and Harsh Parenting subscale.

Table 4 Quality ratings of the included studies

Number	Authors	Theoretical framework	Representative sample	Study design	Inclusion / exclusion criteria	Psychometric properties	Confounding variables	Mediation analysis	Adequate Power
1	Nix et al. (1999)	2	2	2	1	1	2	2	0
2	Jackson and Huang (2000)	2	2	0	1	2	1	2	2
3	Sacco and Murray (2003)	2	2	0	2	2	0	0	1
4	Feinfield and Baker (2004)	1	2	2	2	1	1	0	0
5	Jackson and Scheines (2005)	2	2	2	1	1	1	2	2
6	Jackson et al. (2009)	2	2	2	1	2	1	2	0
7	Kötter et al. (2010)	2	2	0	2	2	0	2	2
8	Meunier et al. (2010)	2	2	2	1	2	2	2	2
9	Graf et al. (2012)	2	1	1	0	2	1	1	2
10	Hanisch et al. (2014)	2	2	2	1	2	1	2	0
11	Park et al. (2016)	2	2	0	2	2	2	2	2
12	Seabra-Santos et al. (2016)	2	2	2	2	1	1	2	2
13	Katzmann et al. (2017)	2	1	2	2	2	1	2	0
14	Rimestad et al. (2017)	2	2	2	2	2	2	2	1

Discussion

In line with Kazdin's (2007) recommendation, this review examined consistencies across different types of studies. Also, as Rutter (2000) proposed, causal questions about development can be examined by exploring both longitudinal and experimental intervention studies that measure comparable constructs. This review utilised a broad search strategy for each of the areas it explored, including parental cognitions, level and type of externalising behaviour, and methods of mediation analyses. As such, one advantage of this approach was that it aided our awareness of the current literature in relation to these constructs and, therefore, of the context in which the included studies were situated. A number of studies from a variety of designs, including intervention, cross-sectional, and observational longitudinal studies, found support that parental cognitions served as mediators in the relationship between child behaviour problems and other aspects of parenting (e.g. affect or behaviour) as well as attitudes to PMT. However, like Colalillo and Johnston (2016), despite looking for a variety of parenting cognitions, we found limited evidence of investigations of cognitions beyond parental self-efficacy. A growing number of reviews focusing on parenting self-efficacy over the past 20 years (e.g. Coleman and Karraker 1998; Jones and Prinz 2005; Wittkowski et al. 2017) highlight its clinical and research relevance. On the other hand, self-efficacy is only one possible mediator (Jackson and Huang 2000), and there are other cognitive variables which have perhaps been understudied to date such as attributions.

We found that many of the studies under review did not utilise optimal designs that could robustly evaluate mediators and mechanisms. For example, in order to establish the timeline of the proposed mediator and outcome at least three

assessment time points are required. This is because it is necessary to assess the proposed mediator prior to the proposed outcome. Additionally, it is important to assess the “outcome” early (even prior to the midway point) to ensure the mediator has indeed changed before the outcome (Kazdin 2007). As otherwise it is feasible that improvements happened prior to change in the putative mediator. Also, a timeline of mediators and mechanisms and outcomes can be established when assessment is conducted at several time points during an intervention. Furthermore, this provides data on the possibility of bidirectional changes.

Caution was required in interpreting some of the findings of the studies reviewed. For example, although the use of multiple informants is likely to produce better-quality measures of latent variables, and decrease the chance of rater-bias and shared method variance (Nix et al.1999), several studies only used maternal reports.

Additionally, the small number of fathers who took part in most of the studies in this review, reflects the fact that fathers, in comparison to mothers, are often understudied (Pleck 2012). As Colalillo and Johnston (2016) highlighted, many parenting studies are not able to meaningfully explore gender moderation effects due to being unpowered in terms of father participants. Therefore, much of what we know regarding parental cognitions is actually based on maternal cognitions. As such, this is perhaps indicative of the work that is still required to engage fathers in research generally in relation to their children (see Fabiano 2007; and Triemstra et al. 2017, for recommendations).

Issues of analysis

Whilst Baron and Kenny’s (1986) paper on the causal steps approach is possibly one of the most influential works in psychology in relation to methods of

analysis, it is no longer considered to be the optimal method of conducting mediation analysis. Its limitations include low statistical power and a need for large sample sizes, a high risk of Type 2 error, and limitations in relation to testing complex theoretical relationships involving multiple mediator models (MacKinnon et al. 2002). One reviewed study may have prematurely terminated mediation analysis because they failed to meet the first condition of Baron and Kenny's (1986) method - the independent variable (X) and the dependent variable (Y) were not significantly associated. A number of researchers have argued that this condition is not necessary, as a mediation effect may exist even in the absence of a significant relationship between X and Y (MacKinnon et al. 2000; MacKinnon et al. 2002; Preacher and Hayes 2008; Rucker et al. 2011).

Methodological and computing advances over the past thirty years now mean that alternative, more robust methods of mediation analysis are recommended (Hayes 2018). Furthermore, although Zhao et al. (2010) suggested that researchers may not be aware of the errors in Baron and Kenny's logic; given that the three studies in this review that used the causal steps approach were conducted prior to 2014, this may indicate an increased recognition of the limitations of this approach and a greater understanding of the advantages of alternative methods such as SEM (which most of the studies in this review utilised). If used effectively, SEM has many strengths, such as being able to use latent as well as observed variables, and managing higher levels of complexity (Gunzler et al. 2013; Hayes 2018), thus improving ecological validity of findings.

However, SEM is a large sample approach, and although there is a general consensus that small sample size can lead to various difficulties (e.g. small statistical

power, inappropriate model fit statistics, and less accurate parameter estimates), there is no definitive agreement in the literature regarding appropriate sample size for SEM (Muthén and Muthén 2002; Wang and Wang 2012). Whilst it is recognised that establishing appropriate sample size is vital in SEM, very few of the studies in this review utilising this approach explicitly discussed sample size. Furthermore, although there are several approaches that can be used to determine adequate sample size for a particular SEM models, doing so is complicated because this calculation is dependent on several factors such as the number of observed variables and the number of indicator variables per latent variable/factor. Wolf et al. (2013) warn against using the different rules-of-thumb such as a minimum sample size of 100 or 200 (Boomsma 1982, 1985), 5 or 10 observations per estimated parameter (Bentler and Chou 1987; see also Bollen 1989), and 10 cases per variable (Nunnally 1967), as they are not model-specific and may result in enormously inaccurate sample sizes being specified.

Study design

Four of the studies were related to larger research trials or studies, all intervention studies were RCTs, and a number of the studies used a longitudinal design. These designs provide an opportunity to explore the aetiology, development and course of both normative and pathological development. Similarly to other reviews (e.g. Colalillo and Johnston 2016; Forehand et al. 2014), we included different types of externalising behaviour in children (e.g. ADHD and conduct problem behaviours). In our review, the level of externalising behaviour was not restricted, so included children who were clinic-referred or had a diagnosis, as well as those who may have less severe externalising problems and were recruited from

community samples. However, due to the limited number of studies, the variety of mediators investigated, and the different uses of variables (as dependent, independent, endogenous or exogenous variables), it was not possible to conduct a meta-analysis.

Temporal ordering and causation

As mentioned in the previous section, mediation requires causal and temporal ordering of variables (Gunzler et al. 2013). In terms of study design, whilst cross-sectional studies can establish links or associations between certain variables, this design prohibits establishment of a timeline of events (Kazdin and Nock 2003), and does not allow an understanding of the causal mechanisms which longitudinal or pre-post studies can provide regarding child behaviour and parenting (including cognitions, behaviour and affect) (Bugental et al. 1998; Park et al. 2016). However, although both Jackson and Huang (2000) and Park et al. (2016) acknowledge the limitations of testing their hypotheses with cross-sectional data, they also maintain that mediation analysis using such information is justified when the associations between theoretically linked variables can sufficiently explain the empirical data. Furthermore, they propose that such an approach is pragmatic as an initial exploration, before conducting more timely and costly studies of an experimental or longitudinal nature. Additionally, as the empirical study highlights, it is sometimes necessary to conduct research under less than perfect circumstances, in order to advance the field (Hayes 2018). Nevertheless, in order to draw causal inferences, researchers in psychology are increasingly using longitudinal designs which allow for a better understanding of the differential course and direction of effects, and of the development of mutual influences over time (e.g. Dodge et al. 1990; Rutter 2005;

see Selig and Preacher 2009 for an explanation of mediational approaches to longitudinal data). However, several of the cross-sectional studies' findings did accord with those of the longitudinal studies: that self-efficacy was found to be a mediator.

Importantly, there is now a general consensus that relationships between parents' behaviour, cognitions and affect, and child externalising behaviour are reciprocal in nature (Johnston et al. 2009). A decade ago, Pardini (2008) lamented that we still have only limited evidence of children's impact on their parents as most research seems to look at impact of parents. This review also found that very few studies (only two of 14) focussed on the impact of children on their parents, and rather they investigated the impact of parents on their children.

Patterson's (1982) Coercive Theory is at the heart of many behaviourally based parenting interventions (including IY and TEAM) that are designed to break the coercive exchanges between parents and children with conduct problems (Brestan and Eyberg 1998; Pardini 2008; Webster-Stratton et al. 2011). Nonetheless, while mediation models offer an opportunity to explore the complex interactions between parent-child behaviour, cognitions and affect, Pardini (2008, p. 629) argued that few studies have considered intervening mechanisms of influence, describing the child's impact on changes in parenting behaviour as the "neglected end of these bidirectional effects" and claiming that most developmental psychopathology research continues to consider children as "passive recipients of environmental influences". In our review, very few studies took into consideration the impact of children on their parents (e.g. Graf et al. 2012; Meunier et al. 2010). Of the four studies that investigated attributions, three demonstrated a significant relationship

between dysfunctional parental responsibility attributions (parents' causal explanations of problem behaviour that imply the child is blameworthy; Snarr et al. 2009) and externalising behavioural problems (Katzmann et al. 2017; Nix et al. 1999; Park et al. 2016), but the direction of causality could not be identified.

Theoretical frameworks

It is important that those studies using mediation refer to robust conceptual frameworks (Kazdin 2007; Kazdin and Nock 2003). Furthermore, although SEM can be used to infer causal relationships, this must be supported by established theory and prior empirical research (Gunzler et al. 2013). All studies reported a broad theoretical framework upon which to base research questions and hypotheses, such as Coercion Theory (Patterson 1982) in relation to bi-directional relationships between parents and children, or Social Cognitive Theory (SCT; Bandura 1997) in relation to parental self-efficacy. Despite this, one study failed to report strong theoretical premise or prior empirical evidence in relation to the cognitive mediators that were investigated (Feinfield and Baker 2004). However, this may have been due to this study being primarily focused on an intervention rather than the exploration of parental cognitions.

Limitations

Several limitations need to be considered when interpreting these findings. First, since the aim of our review was to provide an overview of how parental cognitions and child behaviour problems are measured and investigated using mediation analysis, we did not consider all mediators. We also restricted our age range criteria to exclude infants, toddler and adolescents and thus excluded some

interesting research papers (e.g. Gardner et al. 2006; Weaver et al. 2008). A further implication of this is that we may have missed out on some key findings that could help to explain the relationship between parenting and child externalising behaviour problems. On the other hand, broad inclusion criteria can make a meaningful synthesis of findings difficult. This is a potential issue in relation to our inclusion of multiple types of study design, unlike other reviews related to parenting and mediation (e.g. Forehand et al. 2014; Sandler et al. 2011; Sawrikar and Dadds 2017).

Given the papers span a period of twenty years, over this time mediation analysis conventions have developed (see Hayes 2018 for a historical overview of mediation analysis). As such, these findings should be borne in mind when interpreting some of the quality criteria.

As with any review, we recognise the possibility of publication or reporting bias, particularly as research with non-significant findings may be less likely to be published, as well as the possibility that published studies may have omitted non-significant findings (McLeod and Weisz 2004). However, since we only included studies fitting our inclusion criteria, the quality of selected studies benefited from the exclusion of descriptive or qualitative studies and studies in non-peer reviewed journals. Despite these caveats, it is reasonable to assume that the studies reviewed here are representative of the quality of mediation analysis being used in this research area.

Conclusion

We reviewed 14 studies, spanning two decades, to investigate the ways in which mediation analysis has been used to analyse the relationship between parental cognitions, child behaviour problems, and parenting. This review found that although

parental self-efficacy is a frequently investigated mediator, there are other cognitive variables, such as parental attributions, which have received less attention. The majority of reviewed studies found that self-efficacy mediated the relationship between parenting characteristics/behaviours and child behaviour problems. Four studies looked at parental attributions, but only one (Katzman et al. 2017) investigated it as a mediator. Furthermore, in line with Pardini (2008), we found that most studies investigated the impact of parenting without focussing on the influence of children on their parents.

This review highlights challenges for the interpretation of the findings of some of these studies due to small sample sizes, low power, particular approaches to mediation analysis and suboptimal designs. We also point to the well-recognised, and on-going problem regarding the paucity of research into fathers' cognitions regarding their children's behaviour problems.

While mediation analyses are dependent on the use of strong prior theory, theories can only be further developed if they are tested by robust empirical research. Encouragingly, in the reviewed studies, more robust methods of mediation were increasingly used over time. This review highlights that sophisticated statistical methods and tools should be used in conjunction with robust study designs to explore the role of mediating variables in the complex relationships between parents and their children. Exploring cognitive mediators beyond self-efficacy, such as parental attributions, will allow us to further develop our understanding of the relationship between child behaviour and parenting.

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Journal Article 2: Empirical Study

Parenting and child externalising behavioural problems: an exploration of the role of parental cognitions and characteristics^a

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Parenting and child externalising behavioural problems: an exploration of the role of parental cognitions and characteristics

Abstract

Background: Although parent management training (PMT) has been shown to be an effective treatment for early behaviour problems in children, a third of children and families do not demonstrate improved outcomes. This may be related to difficulties with parental engagement and premature dropout. One possibility is that parents' beliefs regarding their children's behaviour and their own competence are related to both the development and maintenance of their children's behaviour problems and engagement in PMT.

Aims: Using data from parents attending an evidenced-based parenting programme (the Incredible Years) for families with young children, this study explored whether parental factors, including the type of parental attributions, the levels of parental stress, the level of parental metacognition, and attachment insecurity, were associated with baseline child behaviour problems. Parental attributions were hypothesised to mediate the relationship between attachment insecurity and child behaviour problems. Baseline levels of child behaviour problems and parental stress were hypothesised to predict premature dropout rates.

Methods: One hundred and twenty-five parents of children aged 3-6 years old, attending the 14-week IY preschool programme with three local authorities, were recruited. Participants completed pre and post-intervention measures. Mediation analyses were used to investigate whether parental attributions mediate the relationship between attachment insecurity and child behaviour problems.

Results: As hypothesised, there were significant relationships between parents' attachment insecurity and baseline levels of parental stress, parental attributions and child behaviour problems. Mediation analyses demonstrated that parental attachment insecurity and child externalising behaviour were mediated by child-responsibility attributions. None of the study variables, and only parent age as a demographic variable, were found to differentiate parents that completed the programme from parents who dropped out of the intervention.

Discussion: Identifying predictors, moderators and mediators of child externalising behaviour problems, such as dysfunctional parental attributions, and insecure attachment styles, can help to highlight those families that may require interventions to be tailored to meet their particular needs. Identifying those individual caregivers who may be at risk of early dropout can ensure that efforts are made to support these families to either remain engaged or offer alternative support.

Key words: child externalising behaviour, parental attributions, parental attachment styles, predictors, moderators, mediators

Word count: 9,995.

Introduction

Aggression, non-compliance, and oppositional behaviours are normative and highly variable among young children (McKee et al. 2008). However, between five and 13% of preschoolers' mothers report that their children display moderate to severe externalising behaviours, with higher levels amongst families with lower socioeconomic status (Charles et al. 2011; Scott et al. 2010). Such disruptive child behaviours are challenging to manage and are one of the main referral reasons for which parents seek professional support (Kazdin et al. 1990; Lundahl et al. 2006).

Left untreated, early onset externalising behaviour problems can lead to a range of negative outcomes throughout childhood, adolescence and into adulthood, including difficulties with relationships, employment, and substance use (Bywater et al. 2009). Due to significant costs associated with problematic behaviour to individuals, families and society, considerable research and resources have been used to determine the risk factors for the development of externalising behaviours as well as the efficacy of prevention and treatment interventions.

As parents are considered the primary agents of change, over the past 50 years direct interventions such as parent management training (PMT) programs have become a popular intervention approach (Wyatt Kaminski et al. 2008). Based on extensive empirical data and theoretical models (Patterson et al. 1992), the premise of PMT is that, through their own behaviour, parents contribute to the long-term development and maintenance of the children's disruptive behaviours (Lundahl et al. 2006). As such, PMT aims to modify parents' behaviour, perceptions, communication, and understanding with the goal of improving child behaviour.

Parent Management Training

Parent management training has been found to reduce behaviour problems in young children (Gardner et al. 2010; National Institute for Health and Clinical Excellence; NICE 2013). NICE have provided guidance in the UK on providing evidence-based parenting interventions for the treatment of conduct problems. However, even under optimal conditions, research trials have found that outcomes do not improve through PMT for at least one third of children (Pearl 2009; Scott et al. 2001; Webster-Stratton et al. 2011). Some of this may be due to parents demonstrating limited engagement or not fully completing the intervention, often referred to as "dropout" in the parenting literature (Baker et al. 2011; Lavigne et al. 2010; Lundahl et al. 2006). Axford et al. (2012) reported PMT dropout rates of 40-60%, even when incentives such as transport, refreshments or childcare were offered. Baker et al. (2011) estimated that only 20-40% of those children who require treatment actually receive it and that many of those may not finish the intervention. As such, many families that need PMT are unable to benefit from it (Reyno and McGrath 2006; Scott and Dadds 2009). Furthermore, for those children and families who do receive a service, there is a wide disparity in the kind of services provided, which are often not rooted in evidence-based practice, nor necessarily delivered by trained practitioners (Eames et al. 2007).

Intervention - The Incredible Years BASIC Preschool Parent Programme

The Scottish Government has increasingly recognised the need to tackle externalising behaviour problems to ameliorate both the short-term and long-term negative consequences (Scottish Government 2012). In order to promote children's development and wellbeing, Scotland's National Parenting Strategy and the Mental

Health Strategy highlight the government's commitment to early intervention and easily accessible support to parents in the community (Scottish Government 2012, 2017). The goal of the Psychology of Parenting Project (PoPP), developed by NHS Education for Scotland (NES), is to make evidence-based PMT accessible to families with young children (aged 3-6 years) who demonstrate high levels of externalising behaviour problems (NHS Education for Scotland 2017). One such programme is the Incredible Years (IY) pre-school parenting programme.

The effectiveness of the IY pre-school parenting programme has been demonstrated in a considerable number of randomised control trials (Jones et al. 2007; Pidano and Allen 2015), in real world settings (Gardner et al. 2010; Little et al. 2012), as well as in several meta-analyses (e.g. Michelson et al. 2013; Reyno and McGrath 2006). According to Stattin et al. (2015), the design of the IY programme was based on social learning theory, namely Patterson's (1982) coercion model, as well as Bandura's (1986) ideas of modeling and self-efficacy, and Piaget and Inhelder's (1962) developmental interactive learning methods.

Theoretically, cognitive-behavioural parenting interventions regard parenting behaviour as the primary mechanism behind the improvement in children's behavioural problems (Forehand et al. 2014). As such, overt parenting skill is the most frequently studied intervention mechanism (Gardner et al. 2010; Patterson et al. 1992). However, parental practice cannot fully account for child behavioural outcomes (Colalillo and Johnston 2016), highlighting the value of exploring alternative variables.

Rationale for Study

Mediators and Moderators

Examining predictor, moderator and mediator variables is one possible avenue for improving intervention effectiveness by looking at the mechanisms of change through asking *how* and *why* an intervention leads to certain outcomes (mediators), as well as *for whom* PMT is most likely to be of benefit (moderators) (Baker et al. 2005; Gardner et al. 2006; Hinshaw 2002; Hutchings et al. 2012; Leijten et al. 2013). This section considers a number of potential predictors, mediators and moderators of the relationship between parenting and child externalising behaviour.

A number of studies have attempted to identify relevant child, parent, and intervention variables in relation to treatment outcome, engagement and dropout. Commonly found predictors of lack of engagement and attrition are: low socioeconomic status, parental stress and depression, and severity of child dysfunction (Nock and Kazdin 2001). Similarly, in relation to treatment outcome, several meta-analyses demonstrate that frequently investigated variables for children include the severity of pre-intervention behaviour, age and gender (Lundahl et al. 2006; McCart et al. 2006). Commonly investigated parent/family variables include demographic factors such as socio-economic status, marital status, maternal psychopathology, parental stress and parenting style (see meta-analyses by Lundahl et al. 2006 and Reyno and McGrath 2006). Both meta-analyses found that the main factors that could explain the differential outcome in PMT were maternal mental health, especially maternal depression, and socioeconomic disadvantage, although more recent reviews (e.g. Furlong et al. 2012) have suggested that positive outcomes

are also possible for interventions delivered in real world service settings despite socioeconomic status.

In the context of an observational community-based intervention, this study explores both established variables (e.g. parental stress, and child and parent demographic variables), as well as some more novel predictors, moderators and mediators of outcome (child externalising behaviour problems and attrition). These more novel parental factors include dysfunctional parental attributions, parental metacognition and parental insecure attachment styles.

Parental Stress

Several multivariate models of parenting stress propose that the complex interaction between parental characteristics (e.g. parental psychopathology), child variables (e.g. temperament), and environmental factors (contextual sources of stress and support) influence parental functioning (Abidin 1990; Belsky 1984; Mash and Johnston 1990; Webster-Stratton 1990). These factors influence parenting behaviour and the pattern of parent-child interactions (Bloomfield and Kendall 2012). For example, parents who perceive themselves as struggling are likely to feel their role as parents as a source of stress (Vondra and Belsky 1993), especially if they consider their child to be difficult, which may lead to coercive patterns of parent-child interactions (Östberg and Hagekull 2000). As such, parenting stress can stem from a parents' beliefs regarding both their child's behaviour and their own competence in the parenting role (Abidin 2012).

Elevated parental stress is associated with higher levels of children's behaviour problems (Harrison and Sofronoff 2002; White and Barrowclough 1998). Families under stress are more likely to access treatment, but they also face a higher

risk of dropping out (Gopalan et al. 2010; Johnson et al. 2008). Additionally, parents who have high levels of stress may be more likely to find the intervention demanding, which may increase the likelihood of drop out from PMT (Nock and Ferriter 2005). Also, parental stress may decrease motivation to fully engage in an intervention and make it more challenging for parents to change their behaviour in a consistent manner (Chacko et al. 2017). For these reasons, it is vital to explore a range of factors that underlie stress in the parent-child relationship in families with children with behavioural problems (Mash and Johnston 1990).

Parental attributions, the parent-child relationship, and interventions

Research has also highlighted the contribution of parental cognitions, such as attributions, to the development and maintenance of children's behaviour problems (Johnston et al. 2009; Slep and O'Leary 1998), and to the quality of the parent-child relationship more generally (Leung and Slep 2006; Snyder et al. 2005; Wilson et al. 2006). Attribution theory explains how people interpret the causes of social behaviour (Heider 1958) in terms of two broad categories: *causal attributions* (or *parent-referent attributions*), where parents see themselves as the cause of their children's behaviour; and *responsibility attributions* (or *child-referent attributions*), where parents view their children as responsible due to disposition, judgment, or ability (Mattek et al. 2016). Causal attributions focus on *why* an event happens, whereas responsibility attributions relate to *who* is to blame (Snarr et al. 2009).

It is well established that parents' dysfunctional attributions of children's behaviour are associated with negative family functioning, including externalising child behaviour problems, poor parental practices (e.g. authoritarian or permissive disciplinary strategies) and physical abuse (Snarr et al. 2009; see also Bugental and

Johnston 2000; Miller 1995 for reviews). In fact, it has been suggested that negative parental attributions may contribute to and maintain a child's behaviour problems (Dix et al. 1986; Wilson et al. 2006). On the other hand, parents of children with elevated levels of behaviour problems are comparatively more likely to have increased stress and maladaptive parenting cognitions (Bugental and Johnston 2000; Colalillo and Johnston 2016). Thus, in line with social cognitive theories, attributions contribute to the parents' response which, in turn, determines the child's behaviour (Dix et al. 1986; Park et al. 2016), creating a transactional system in which child behaviour both influences and is influenced by parental responses (Belsky and Barends 2002).

In addition to established predictors such as socioeconomic status, parental stress and psychopathology, and severity of children's behavioural problems, researchers are increasingly recognising the importance of investigating parental cognitions in relation to treatment outcomes (Nock and Kazdin 2001; Tamm et al. 2012). Mattek et al. (2016) found that caregivers who believed that they contributed to their child's behaviour problems (causal attribution) were significantly more likely to achieve improved child outcomes. In contrast, caregivers who considered their children to be responsible for their own behaviour (responsibility attribution) were less likely to benefit from treatment. Alongside investigating factors that predict treatment success, high PMT dropout rates indicate the importance of considering factors that impact on parent engagement. Parental attributions have been associated with beliefs about change and whether to proactively seek support for their child's behaviour (Hoza et al. 2000; Morrissey-Kane and Prinz 1999; Scott and Dadds 2009), and have been found to predict treatment enrolment, attendance, and

participation (often referred to as "engagement"); as well as termination and success (Mah and Johnston 2008; Miller and Prinz 2003; Peters et al. 2005).

Parents' metacognition

Parents' relationships with their children are affected by their own early childhood experiences with primary caregivers (Bowlby 1988; Crittenden and Ainsworth 1989). Slade (2005) argued that a parent's capacity to consider their child's mental state is key to attachment security. She defined *parental reflective function* as the parents' capacity to understand and anticipate both parents' and children's emotions, intentions, beliefs, desires, needs and thoughts. Reflective functioning is conceptually similar to related constructs such as mentalization and metacognition (Williams et al. 2016). In particular, there are areas of overlap between metacognition and some aspects of reflective functioning (Fonagy et al. 2002; Williams et al. 2016). Metacognition relates to an individuals' awareness of their own thinking and involves actively paying attention to one's cognitive processes or, in other words, "thinking about thinking" (Flavell 1979). Metacognition allows humans to reflect upon, and positively change, their behaviour, thoughts and emotions when faced with difficult situations (DeMarree and Morrison 2012). Roskam (2015) has suggested that examining different change processes, such as metacognition, might provide a means of improving positive parenting. However, in the parenting field, to date, there is a paucity of research that explicitly refers to metacognition (Roskam 2015).

Parental attachment styles

Attachment and parenting are strongly associated (Adam et al. 2004). Whilst adult attachment style is generally understood to be in relation to romantic partners, it is also connected to the parenting role and includes parents' attitudes and practices, such as showing warmth, providing supervision, protection and support (Cohen et al. 2011).

Adult attachment patterns are believed to be relatively stable (Fraley and Shaver 2000; Hazan and Shaver 1987). Consistent with Bowlby's (1988) original work, there is a general consensus that adult attachment can be defined by two key dimensions: attachment-related anxiety and attachment-related avoidance (Bartholomew and Horowitz 1991; Sibley et al. 2005). Fraley and Shaver (2000, pp. 142–143) aligned attachment-related avoidance with "discomfort with closeness and dependency or a reluctance to be intimate with others," and attachment-related anxiety with a person's tendency toward "anxiety and vigilance concerning rejection and abandonment".

Attachment patterns influence, at least to an extent, self-efficacy beliefs, interpersonal functioning and methods of regulating affect and distress in adulthood (Rholes and Simpson 2004; Williams and Riskind 2004). Individuals who have an insecure attachment style have been found to be more likely to feel anxious, angry, and distressed in stressful situations and less confident in their ability to manage challenging situations, in comparison to those with secure attachment styles (e.g. Hunter et al. 2006).

As such, there is evidence to suggest that insecure attachment orientation may lead to poorer parental functioning, particularly in the context of managing a child

with externalising behaviour problems (Jones et al. 2015). Jones and colleagues called for research into the influence of parental attachment styles on related constructs such as reflective functioning, as well as investigations into the potential of a range of cognitions to mediate or moderate relationships between parental attachments styles and parenting behaviour. Insecure attachment patterns are also associated with psychopathology in adulthood, including anxiety and depression (e.g. Bakermans-Kranenburg and van IJzendoorn 2009; Williams and Riskind 2004), and have been found to have a detrimental effect on the psychotherapy process, such as a willingness to seek help (e.g. Dozier 1990), therapeutic alliance (Castonguay et al. 2006; Daniel 2006) and therapeutic outcomes (Schauenburg et al. 2010). Along these lines, Nygren et al. (2012) suggested that attachment style, in affecting a parents' capacity to cope with stress and his/her willingness to seek support, is likely to have an impact on overall family stress. Korfmacher et al. (1997) found that using the AAI, mothers with more secure representations were more engaged in and accepting of a preventative parenting intervention, in comparison to those parents with insecure representations. Therefore, it would seem that there may be some association between engagement, help-seeking behaviour, and attachment style. Parents with high levels of attachment avoidance may struggle to sustain engagement with a parenting programme if it activates attachment-related distress, and those with high levels of attachment anxiety may engage well with the intervention, although may still not derive full benefit due to stress and problems with reflective functioning.

In this section, we have highlighted the important role that parental attributions and parental attachment styles have in relation to the parent-child

relationship, as well as their potential role in engagement and attrition from PMT. Although insecure attachment has been established as a potential risk factor for developing parenting problems (Edelstein et al. 2004), further research may be able to elucidate whether these impact on a parents' engagement through sustained attendance and completion of a parenting intervention. This study sought to explore the relationship between these variables in the context of a community-based behavioural parent training intervention.

Aims

We aimed to investigate the extent to which parental attachment style, metacognition and dysfunctional attributions predicted, moderated or mediated baseline levels of externalising child behaviour problems and parental stress as reported by parents who attended an evidence-based behavioural parent training intervention in a community setting. A second goal was to determine whether family's demographic variables, level of attendance, and completion status play a role in the parents' reported levels of parenting stress and child behaviour problems.

Hypotheses

This study tests the following hypotheses:

- (1) Baseline levels of parental stress, parenting metacognition, parental attributions and attachment insecurity will be associated with baseline child behaviour problems;
- (2) Parental attributions will mediate the relationship between attachment insecurity and child behaviour problems.

(3) Baseline levels of child behaviour problems and parental stress will predict premature dropout rates.

Methods

Study Design

This observational study of routine delivery of an evidence-based parenting programme used a single-group, within-subjects design (repeated measures) with participants serving as their own controls. As the effectiveness of the Incredible Years BASIC Preschool Parent Programme (Webster-Stratton 1998) has been established (Brestan and Eyberg 1998; Furlong et al. 2012; Pidano and Allen 2015), the present study did not include a control group.

Participants

To be eligible for this study, parents had to attend at least one session of the 14-week parenting programme and complete baseline questionnaires within three weeks of the first session relating to a target child aged three- to six-years-old. Exclusion criteria included: people not in a primary caregiving role; and parents who consented to participate but had not completed the measures within the first three sessions (so that exposure to the intervention did not confound their scores).

Although the IY preschool programme is intended for parents of three to eight year olds, participating parents across the local authorities reported their children were aged between 1 to 10 years. Data were received from 125 parents (including 4 couples) of 121 indexed children. Of the 125 attendees who agreed to participate, 11 were excluded from analysis (because the children were less than 3 or more than 6 years old, $n=8$; the questionnaires had been completed by a non-parent, $n=2$ grandmothers who did not reside with the child; and in one case more than 25%

of the data was missing). Hence, this study reports on the final sample of 114 eligible families' data from baseline (pre-intervention) and 61 eligible participants that returned the post-intervention measures (54% of participants). See Fig. 1 for a Consort diagram showing the flow of participants through the study.

The majority of respondents (from now on referred to as “parents”) were mothers (91%; 104); the sample also included nine fathers and one grandmother (kinship carer) with a three- to six-year-old child. Sixty-six percent of the children were male (75 boys and 39 girls). Table 1 presents baseline demographic and family characteristics for those families included in analyses. At baseline, the average age for children in the study was 4.48 years ($SD = 1.07$) at the initial data collection point (pre-intervention; T1). Four children aged two at baseline were included in the analysis as they turned three-years-old during their parents' attendance at the group. Parents had a mean age of 34.97 years ($SD=6.60$). Eighty-six percent of the parents were White (75% of these were Scottish, English or British), 3% data was missing for ethnicity, the remaining 11% came from a variety of countries. Seventy-three percent of the families reported they were married or cohabiting with a partner, 25% were single parents (predominantly mothers), and 2% data was missing for marital status.

In this community sample, 59% of children were identified as being at risk for disruptive behaviour based on caregivers' ratings. This was defined as above the clinical cut-off point (the 90th percentile; a score of above 130; Eyberg and Pincus 1999) on the ECBI Intensity (range = 56-241, $M = 142.29$, $SD = 36.91$).

Recruitment and Procedure

The Research Ethics Committee granted ethical approval (IRAS Project ID: 212592 16/NW/0674) for all study procedures. See Appendix 4 for confirmation of ethical approval. Each local authority also gave permission to invite parents to participate, as did the University of Edinburgh Clinical Psychology Department. All parents gave written informed consent. Measures included parent-completed questionnaires, collected at two assessment points, pre-intervention (Time 1) and 14 weeks later at post-intervention (Time 2). The intervention took place between these times.

A community sample was obtained by using a recruiting strategy targeting all parents attending the Incredible Years preschool programme across three local authorities (one urban, one semi-rural, one rural) in central Scotland. Recruitment took place at one of three time points between November 2016 and October 2017. Data was collected from 23 groups, with between five and 14 parents per group (mode $n=5$), run in community settings such as primary schools, nurseries and early years/family centres.

Intervention - The Incredible Years BASIC Preschool Parent Programme

The aim of this manualised programme is to improve parents' skills and positive parenting by encouraging parents to use praise, incentives and reinforcement of appropriate child behaviour; using play to improve parent-child interaction; and managing noncompliance through effective limit setting and consistent consequences (Barlow et al. 2014; Gardner et al. 2010). The programme uses a variety of effective learning strategies such as collaboration, role play, modelling, group discussion,

supporting the identification of social learning principles, practising skills, and home activities (Chronis et al. 2004; Jones et al. 2007; Posthumus et al. 2012).

For the current study, the Incredible Years groups were delivered over a period of 14 weeks, 2-hours per session. Families primarily self-referred but some were referred for support with parenting by their GP, nursery, school, or mental health professionals. Each group was run by two trained facilitators (herein called group leaders) from various professions, including health, social work, education and the voluntary sector. All 38 group leaders had undertaken the compulsory three-day training in the Incredible Years parenting programme. All group leaders had run at least one previous group. Parent evaluation sheets were completed after each session and the accompanying book provided to parents. Parents were called weekly to review home assignments. Also, if a parent missed a session, group leaders contacted them to either cover the missed content or invite them to attend the next session earlier in order to discuss the missed session content.

Measures

Primary child outcome measure

The Eyberg Child Behaviour Inventory (ECBI)

The ECBI (Eyberg and Pincus 1999) is a commonly used 36-item parent self-report measure used to assess externalising problem behaviour, in children aged 2 to 16 years. It comprises two scales; an Intensity Scale and Problem Scale. The Intensity Scale measures the frequency of the problem behaviour on a seven-point scale, ranging from 1 ('Never') to 7 ('Always') and yields a total score ranging from 36 to 252. The Problem Scale asks parents to report whether the behaviour is perceived to be problematic ('Yes' or 'No', scored one or zero, respectively) and

yields a total score ranging from 0 to 36. The validity and reliability of these scales has been shown to be acceptable (Boggs et al. 1990; Eyberg and Pincus 1999; Rich and Eyberg 2001) and the present study demonstrated good internal consistency for the Intensity Scale (Cronbach $\alpha = .94$ and $\alpha = .95$) pre- and post-intervention.

Parent measures

The Parenting Stress Index Short Form (PSI-SF)

The PSI-SF (Abidin 2012) is a 36-item parent self-report measure used to assess parenting stress in three domains: Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child. Items are rated on a five-point scale ranging from 1 ('Strongly Disagree') to 5 ('Strongly Agree'), with higher total scores indicating greater levels of parenting stress. High internal consistency ($\alpha = .83$) and one year stability ($r = .75$) have been reported (Haskett et al. 2006). The Total Stress score, derived by adding together the three PSI-SF domains was used, generating a Cronbach alpha of .95 for both pre- and post-intervention.

The Parent Cognition Scale (PCS)

The PCS (Snarr et al. 2009) is a 30-item parent self-report measure used to assess dysfunctional child-responsible and parent-causal attributions in relation to the behaviour of the index child. Parents are asked to consider all misbehaviour over the past two months, rather than think of a specific instance of misbehaviour. Items are rated to indicate the extent to which parents agree that different explanations for the occurrence of misbehaviour are true for the index child on a six-point scale ranging from 1 ('Always True') to 6 ('Never True'). Each item is reverse scored, with higher scores indicating greater agreement and more dysfunctional attributions. The child-responsible subscale includes nine items that attribute misbehaviour to factors related

to the child intentionally or deliberately misbehaving and/or desire to have a negative impact on the parent (and reflect a child-blaming perspective). The parent-causal subscale includes seven items that attribute child misbehaviour to fixed traits of the responding parent. The remaining items are distractor items that attribute misbehaviour to uncontrollable and/or unintentional child factors, or to unstable, specific, and situational parent factors. The original study reported that the basic factor structure had a good fit for both mothers and fathers. The present study demonstrated good internal consistency for parent-causal (Cronbach $\alpha = .77$ and $\alpha = .75$) and child-responsible (Cronbach $\alpha = .89$ and $\alpha = .92$) dimensions, pre- and post-intervention.

The Metacognitions Questionnaire (MCQ-30) Cognitive Self Consciousness subscale

The MCQ-30 (Wells and Cartwright-Hatton 2004) assesses different aspects of meta-cognition through a self-report questionnaire. The present study used only the Cognitive Self Consciousness subscale. This subscale uses six items to assess a parent's inclination to focus on thought processes (e.g. "I monitor my thoughts"). Each item is rated according to a four-point scale ranging from 1 ('Do Not Agree') to 4 ('Agree Very Much'), with higher total scores indicating parents who focus more on thought processes. The Cronbach alpha for the Cognitive Self Consciousness subscale is reported to be .92 and the test-retest reliability is reported to be .87 (Wells and Cartwright-Hatton 2004). In the present study, $\alpha = .87$.

The Experiences in Close Relationships–Revised (ECR-R)

The ECR-R (Fraley et al. 2000) uses 36 items to measure attachment avoidance and attachment anxiety. Two scales of 18 items each are scored using a

seven-point scale ranging from 1 ('Strongly Disagree') to 5 ('Strongly Agree').

Means are calculated for each dimension. Sibley et al. (2005) showed the ECR-R to be both reliable and valid. Cronbach's alphas in the current study were .93 for anxiety and .92 for avoidance.

Parent Demographic questionnaire

A brief demographic questionnaire was used to assess parent characteristics, including gender, age and ethnicity demographic details are summarised in Table 1.

Group leader demographic questionnaire

A brief demographic questionnaire was used to assess group leader characteristics (e.g. job titles, ethnicity, background experience and qualifications).

See Appendix 11. The 38 group leaders were largely a homogenous group: all were white British and 98% were female (1 male group leader).

Attendance, Attrition and Implementation Fidelity

Following Furlong et al.'s (2012) review, we investigated parents' attendance rate and completion status. At the end of each group (i.e. at time point two), either group leaders or the local authorities provided the weekly attendance register to the researcher in order to establish parents level of attendance by calculating the percentage of sessions they attended out of a possible 14 sessions, and facilitate identification of programme "completers" and "non-completers". In line with previous studies (e.g. Stattin et al. 2015; Werba et al. 2006), we explored whether potential baseline characteristics of the parents and children were pre-intervention predictors of parents' completion status. "Completers" were operationalised as attending seven or more sessions (i.e. at least half of the intervention), conversely

those parents that attended six or fewer sessions, and/or indicated they would not be returning to the group were classified as "non-completers".

Power Calculation

We calculated the required sample size for correlations and mediation using Green (1991), and confirmed this with an effect size calculator (Soper 2018). Both calculations were based on the desired probability level (0.05), the number of predictors in the model (6), a medium effect size ($f^2 = 0.15$), and the desired statistical power level (.8), and showed that between 98 and 110 participants would be required for testing multiple correlations and individual predictors. According to Wilson Van Voorhis and Morgan (2007), the larger sample size should be used where both are being tested. Other studies using the same intervention (the Incredible Years) and primary outcome measure (the ECBI Intensity score) have used total sample sizes of between 76 and 97 (power .80, $p < .01$; Gardner et al. 2007, Webster-Stratton and Hammond 1997, respectively). To allow for attrition, we felt 110 was an adequate sample size, even when taking into account the community sample which may mean treatment effects might be weaker (e.g. Gardner et al. 2007).

Data Analyses

For hypothesis 1, Pearson's correlations were used to test associations between dependent variables (ECBI Intensity Scale scores) and all other variables (Williams et al. 2016).

For hypothesis 2, we conducted two separate mediation analyses to explore whether child-responsible attributions mediated the relationship between parental

insecurity (attachment avoidance and attachment anxiety, independent variables) and child behaviour problems (dependent variable) (Hayes 2009; Xu et al.2014).

For hypothesis 3, we examined the equivalence of the completers and non-completers based on the dependent variables (baseline levels of child externalising behaviour and parental stress), as well as baseline child variables (e.g. gender, age) and family background variables (e.g. family composition, parent's gender, age, ethnicity). Analysis of variance (ANOVA) was used for continuous variables and chi squared (χ^2) analysis for categorical variables (Baker et al. 2017; Ludmer et al. 2017). When using effect size with ANOVA we used η^2 (eta squared) (Pallant 2016). Cohen (1988) classifies effects sizes as small (.01), medium (.06), and large (.14 and more).

All statistical analyses were conducted using Statistical Package for the Social Sciences version 22.0 (SPSS v. 22). Descriptive and exploratory analyses were conducted including tests of normality, correlations, and mediation analyses. For brevity, we only include mediation analyses in relation to child externalising behaviour problems using Hayes Process Macro for SPSS (Hayes 2018).

Results

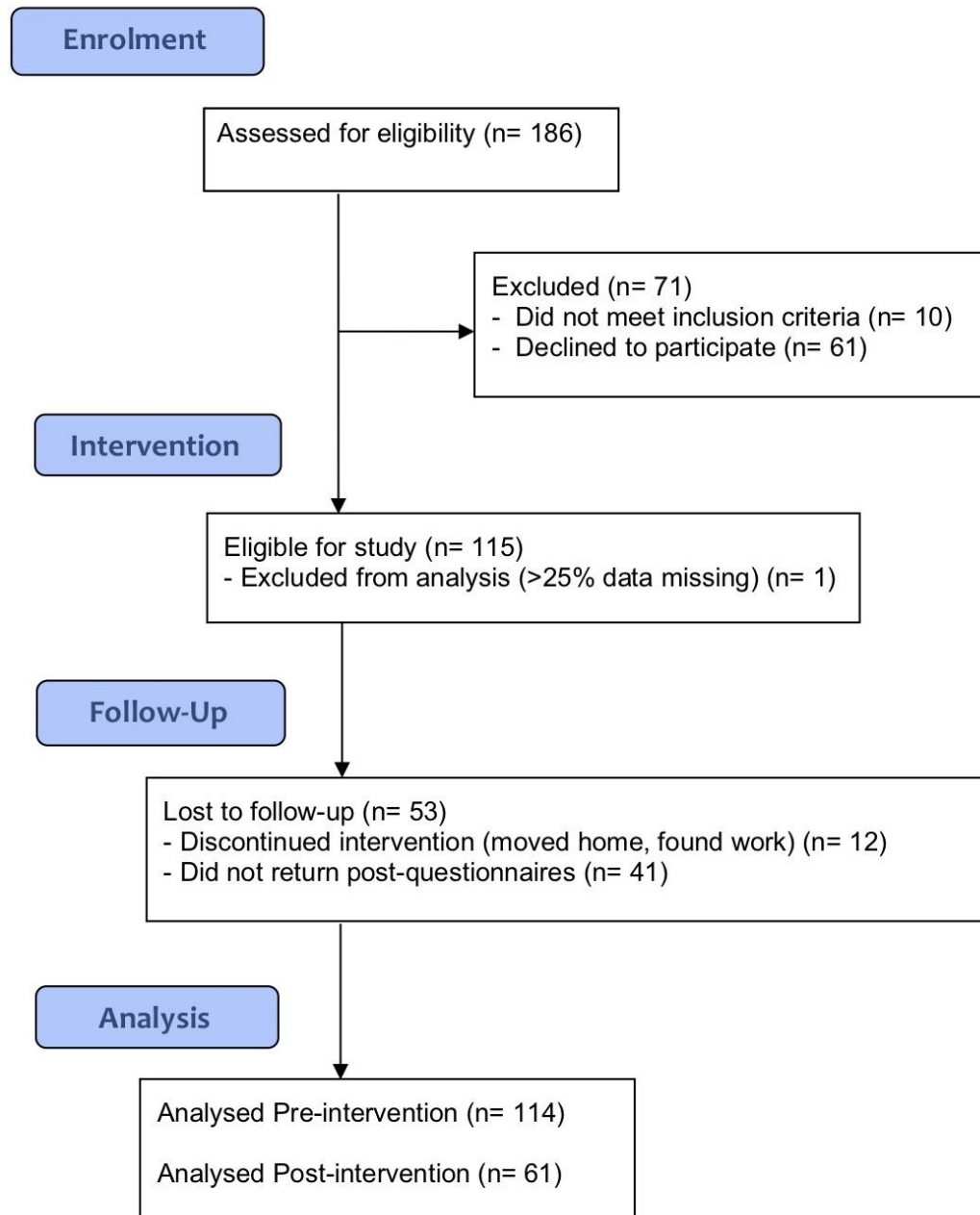
Sample characteristics

Participant flow is shown in Fig. 1. The vast majority of the sample were mothers (91%) and there were more boys (66%) than girls. Twenty-five percent were single parents. The mean age of the index child for whom the intervention was targeted was 4.48 years, and was similar for boys and girls. Of the 114 eligible families assessed at baseline, 61 (54%) eligible families completed post-intervention assessment. Participant characteristics are shown in Table 1.

Table 1 Baseline Participant Characteristics

Demographic	<i>n</i> (%)	Mean	SD	Range
Mother age (years)	104 (91)	34.4	6.14	21-53
Father age (years)	9 (8)	38.9	5.88	31-47
Grandmother age (years)	1 (1)	59		
Number of children		2	.87	1-4
Child age (months)	114	53.71	12.79	34-84
– male	75 (66)	54.25	13.19	34-84
– female	39 (34)	52.68	12.07	34-76
Relationship status				
Married/cohabiting	83 (72.8)			
Single/divorced/ separated/widowed	28 (24.6)			
Missing	3 (2.6)			

Fig. 1 Flow diagram of participants through study



Preliminary Analyses

Inclusion and Treatment of Missing Values

One hundred and twenty-five carers participated at baseline. As outlined in the Methods section, 11 participants were excluded. Excluded participants did not differ significantly from included participants on demographic variables such as gender or age. Consequently, 114 participants (female $n = 105$; male $n = 9$) were retained for analyses. After excluding the 11 participants, only one case had more than 5% missing values (this participant missed the whole of the PSI-SF but was retained because they had completed all other baseline and post-intervention measures). The total proportion of missing data was 1.29% and Little's MCAR test showed that the data was missing completely at random (Little's MCAR test: $\chi^2=2538.96$, $df=2852$, $p=1.00$). As recommended in the ECBI manual guidelines, missing values were replaced with 1 ('Never') for the Intensity Scale and 0 ('No') for the Problem Scale (Eyberg and Pincus 1999). Also, as per the PSI-SF manual guidelines, individual mean substitution for the PSI-SF were used due to the small proportion of missing data in these variables (Abidin 2012). Expectation maximisation was used to impute missing data for the remaining variables in order to improve generalisability, increase power and reduce bias (Graham 2009).

In order to meet the assumptions for both correlation and mediation analyses, all study variables were screened for normality and outliers. Outliers were identified and managed using recommendations by Field (2013). A visual inspection of the respective histograms, normal Q-Q plots and box plots demonstrated that the sample scores for most variables were normally distributed (Doane and Seward 2011; Field 2013; Razali and Wah 2011). Data for all variables was tested for normality using the

Shapiro-Wilk test at $p > .05$, based on recommendations by Field (2013) for small sample sizes. Four study variables and one demographic variable were found to violate parameters for normality: Pre ECBI Problem ($p = .03$); MCQ CSC ($p = .02$); Post PCS PC ($p = .01$); ECR-R Anxiety ($p < .001$); and Child age. When z-score values of skewness and kurtosis were calculated for these variables, the MCQ CSC and the Pre ECBI Problem were found to be within normal parameters of ± 1.96 (Field 2013). However, both the ECR-R Anxiety and post PCS PC were negatively skewed. Transformations were computed for these two variables, along with their counterpart subscales for the respective measures. The post PCS parent-causal variable (along with the post PCS child-responsible scale) was successfully square root-transformed to meet the assumption of normality. The ECR-Avoidance scores were normally distributed but the ECR-Anxiety scores were not, as assessed by Shapiro-Wilk's test ($p < .05$). Neither ECR-R subscales had outliers and transformation (using square root, 'log10' and 'inverse') of the data failed to achieve a normal distribution. However, we have reported Pearson's r for all correlations as there was no significant difference between Pearson's and Spearman's correlations for the non-normally distributed variables.

Descriptive Analyses

Frequency analyses of parents' baseline data demonstrated that more than half of parents reported clinical levels of disruptive behaviour problems on the ECBI Intensity Scale ($n = 67$; 59%; $M = 142.29$; $SD = 36.13$) and the ECBI Problem Scale (51 %, $M = 16.8$, $SD = 8.4$). Whilst parents rated both the intensity and frequency of child disruptive behaviour as higher for girls ($M = 146.41$; $SD = 36.14$) than boys ($M = 140.09$; $SD = 36.91$), an independent samples t-test demonstrated there was no

significant difference in scores ($t(110) = .86, p = .39$, two-tailed). At baseline, 28% ($n=32$) of the parents reported elevated levels of parenting stress on the PSI-SF ($M = 87.5, SD = 25.6$). Again, there was no significant difference between boys and girls ($t(111) = .13, p = .90$, two-tailed).

Intervention Attrition and Attendance

Of the 114 eligible parents, 95 (83%) attended 7 or more of the 14 sessions. For all participants, mean attendance was 10.3 sessions ($SD=3.4$). Completers on average attended 11.6 sessions ($SD=1.85$), whereas non-completers attended on average 3.95 sessions ($SD=1.47$).

Fidelity

The Process Collaborative Checklist (Appendix 12) completed by group leaders showed that treatment fidelity was adequate but there was evidence of important components of the programme missing in some cases (e.g. role practices, home activities). See Discussion section for further exploration of this issue.

Impact of intervention

A supplementary aim was to establish the impact of intervention on externalising behaviour, parental stress levels and parental attributions. For those parents who completed both pre and post-intervention measures, paired-sample t -tests were conducted to evaluate the impact of the intervention on ECBI-I, ECBI-P, PSI-SF, PCS-CR and PCS-PC. The intervention was successful at reducing externalising behaviour problems (both intensity and number of perceived problems), parental stress levels and both parent-causal and child-responsible attributions. Specifically, there was a significant decrease in ECBI-Intensity scores from pre-

intervention ($M=146.12$, $SD=37.82$) to post-intervention ($M=138.28$, $SD=35.95$), $t(57) = 2.21$, $p=.03$ (two-tailed). The mean decrease in ECBI-Intensity scores was 7.85 with a 95% confidence interval ranging from .75 to 14.94. The eta squared statistic (.08) indicated a moderate effect size. Parental stress scores from pre-intervention ($M=103.27$, $SD=27.83$) to post-intervention ($M=93.95$, $SD=24.38$), $t(59) = 4.70$, $p<.001$ (two-tailed). The mean decrease in PSI-SF total scores was 9.32 with a 95% confidence interval ranging from 5.35 to 13.29. The eta squared statistic (.27) indicated a large effect size. Child-responsible attributions from pre-intervention ($M=39.43$, $SD=9.16$) to post-intervention ($M=35.87$, $SD=9.29$), $t(59) = 4.03$, $p<.001$ (two-tailed). The mean decrease in Child-responsible attribution scores was 3.57 with a 95% confidence interval ranging from 1.80 to 5.34. The eta squared statistic (.22) indicated a large effect size. Parent-causal attributions from pre-intervention ($M=23.73$, $SD=5.55$) to post-intervention ($M=19.63$, $SD=5.06$), $t(59) = 7.16$, $p<.001$ (two-tailed). The mean decrease in Parent-causal attribution scores was 4.10 with a 95% confidence interval ranging from 2.95 to 5.25. The eta squared statistic (.46) indicated a large effect size.

Main Analyses

In order to address the hypotheses, the following analyses were conducted: correlations of study variables; mediation analyses to explore the relationship between dysfunctional parental attributions and child externalising behaviour; and one-way ANOVAs and chi square tests to explore the difference between completers and non-completers.

Correlations

In line with our first hypothesis, in general, the results are in accord with our expectations. With the exception of parental metacognition, all the correlations between child externalising behaviour and each of the study variables were statistically significant and in the expected direction. Tests for multi-collinearity demonstrated these were not at levels that were detrimental to the model (Field 2013; Pallant 2016). Baseline levels of child behaviour problems were significantly positively correlated with parent's stress levels ($r=.785$, $p<.01$), parental attachment insecurity (anxiety, $r=.434$, $p<.01$; avoidance, $r=.385$, $p<.01$), and parental attributions (child-responsibility, $r=.698$, $p<.01$; and parent-causal, $r=.423$, $p<.01$). An independent samples t-test was conducted to compare all study variable scores for boys and girls. There was no significant difference in scores between boys and girls across any study variable. Correlations between variables are shown in Table 2 below (untransformed scores are reported unless otherwise noted for clarity).

Table 2 Inter-correlations among baseline study variables

	1	2	3	4	5	6	7	8
1. PSI-SF								
2. ECBI I	.785**							
3. ECBI P	.726**	.835**						
4. MCQ CSC	-.032	.037	.016					
5. ECR-R ANX	.577**	.434**	.467**	.202*				
6. ECR-R AVO	.507**	.385**	.357**	-.181	.402**			
7. PCS CR	.616**	.698**	.654**	-.163	.379**	.360**		
8. PCS PC	.560**	.423**	.412**	.036	.354**	.317**	.409**	

**p<.01; *p<.05

PSI-SF: Parenting Stress Index-Short Form; ECBI – I/P: Eyberg Child Behaviour Inventory (Intensity/Problem subscale); MCQ CSC: Metacognition Questionnaire - Cognitive Self Consciousness subscale; ECR-R ANX/AVO: Experiences in Close Relationships- Revised Anxiety/Avoidance subscale; PCS – CR/PC: Parent Cognition Scale – Child-responsible/Parent-Causal subscale.

Mediation Analyses

To explore the second hypothesis that parental attributions mediated the relationship between baseline attachment insecurity and baseline child behaviour problems, we ran two mediation analyses. Firstly, a regression analysis indicated that attachment anxiety was a significant predictor of child-responsibility attributions, $\beta = 2.76$, $SE = .60$, $p < .001$, and that child-responsibility attributions was a significant predictor of child behaviour problems, $\beta = 2.61$, $SE = .29$, $p < .001$ ($n=112$). These results support the mediational hypothesis. Anxiety was lessened predicting behavioural problems after controlling for the mediator, child-responsibility attributions, $\beta = 4.78$, $SE = 1.97$, $p=.017$, consistent with partial mediation. As the effect of attachment anxiety on child behaviour problems, controlling for child-

responsibility attributions (path c'), is not zero, there may be other factors that also mediate this relationship. Approximately 19% of the variance in child externalising behaviour problems was accounted for by the predictors ($R^2 = .1885$). The indirect effect was tested using a bootstrap estimation approach with 5000 samples (Hayes 2018). These results indicated the indirect coefficient was significant, $\beta = 7.19$, $SE = 1.76$, 95% BCI = 3.92, 10.77. Attachment anxiety was associated with approximately 7 points higher child behaviour problems scores as mediated by child-responsibility attributions. Fig. 2 shows a model of the mediation relationship.

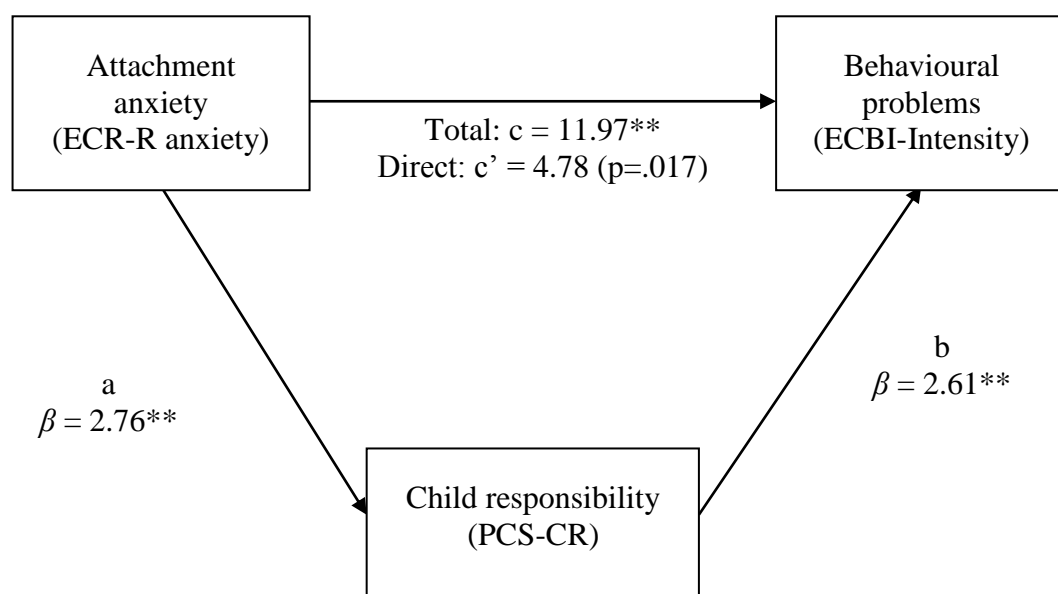


Fig. 2 Child-responsibility as mediator of the association between attachment anxiety and child externalising behavioural problems

Regression analysis was also used to investigate the hypothesis that child-responsible attributions mediated the effect of parental attachment avoidance on child externalising behaviour problems ($n=112$). Results indicated that attachment avoidance was a significant predictor of child-responsibility attributions, $\beta = 2.96$, $SE = .67$, $p < .001$, and that child-responsibility attributions was a significant predictor of child behaviour problems, $\beta = 2.69$, $SE = .29$, $p < .001$. These results

support the mediational hypothesis. Attachment avoidance was no longer a significant predictor of behavioural problems after controlling for the mediator, child-responsibility attributions, $\beta = 3.84$, $SE = 2.20$, $p = .08$, consistent with partial mediation. As the effect of attachment avoidance on child behaviour problems, controlling for child-responsibility attributions (path c'), is not zero, there may be other factors that also mediate this relationship. Approximately 15% of the variance in child externalising behaviour problems was accounted for by the predictors ($R^2 = .1480$). The indirect effect was tested using a bootstrap estimation approach with 5000 samples (Hayes 2018). These results indicated the indirect coefficient was significant, $\beta = 7.97$, $SE = 2.03$, 95% BCI = 4.19, 12.33. Attachment avoidance was associated with approximately 8 points higher child behaviour problems scores as mediated by child-responsibility attributions. Fig. 3 shows a model of the mediation relationship.

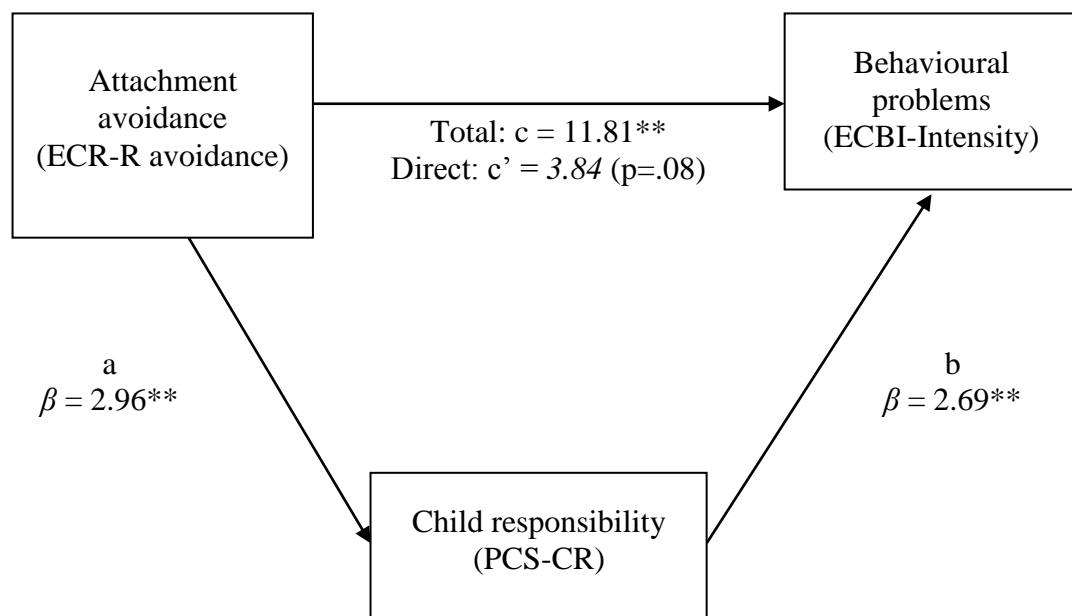


Fig. 3 Child-responsibility as mediator of the association between attachment avoidance and child externalising behavioural problems

To explore hypothesis 3, we examined the equivalence of completers and non-completers at baseline on primary measures of outcome (baseline levels of child externalising behaviour and parental stress). As summarised in Table 3, a series of ANOVA analyses indicated no significant differences between parents who completed the programme and those who dropped out on all study variables. There was also no significant difference related to demographic variables (child age, gender, marital status, and number of children) except for parent age (parents who did not complete the intervention were younger than those who completed the intervention; $F(2, 109) = 5.89, p = .004, \eta^2 = .097$).

A Fisher's Exact test was conducted between parent gender and completion status. The association between parent gender and completion status was not statistically significant, $p = .17$. A chi-square test for association was conducted between completion status and child gender, parent marital status, and child's level of behavioural problems at pre-intervention (i.e. clinical, non-clinical). All expected cell frequencies were greater than five. None of the associations between these variables and completion status were significant (child gender: $\chi^2(1) = 1.75, p = .19$; marital status $\chi^2(1) = 1.12, p = .57$; child's behavioural problems: $\chi^2(1) = .001, p = .98$).

Table 3 Equivalence of completers and non-completers

Measure ^a	Completers			Non-completers			<i>p</i>	Effect size ^b
	Mean (SD)	Range	N	Mean (SD)	Range	N		
PSI-SF	101.73 (25.46)	42-166	94	99.74 (27.92)	56-159	19	.761	.001
ECBI-I	141.21 (37.21)	56-228	94	147.22 (33.91)	86-204	18	.368	.004
ECBI-P	16.26 (8.95)	0-35	87	18.15 (10.86)	1-30	13	.492	.005
MCQ CSC	16.65 (4.68)	7-22	91	15.28 (4.55)	6-24	18	.257	.012
ECR-R ANX	2.97 (1.32)	1.00-6.28	95	2.99 (1.39)	1.17-5.61	19	.944	.000
ECR-R AVO	3.87 (1.21)	1.00-6.94	95	3.88 (1.11)	2.06-5.56	19	.983	.000
PCS-CR	38.33 (8.57)	17-54	94	37.84 (9.47)	19-54	19	.824	.000
PCS-PC	22.60 (5.42)	9-36	94	21.79 (5.85)	11-31	19	.560	.003
Parent Age (Years)	35.79 (6.59)	21-59	95	30.96 (5.08)	23-42	19	.004*	.097
Child Age (months)	54.14 (12.76)	34-84	95	51.59 (13.07)	34-78	19	.795	.004

**p*<.05. ^aANOVA; ^b η^2

PSI-SF: Parenting Stress Index-Short Form; ECBI – I/P: Eyberg Child Behaviour Inventory (Intensity/Problem subscale); MCQ CSC: Metacognition Questionnaire - Cognitive Self Consciousness subscale; ECR-R ANX/AVO: Experiences in Close Relationships- Revised Anxiety/Avoidance subscale; PCS – CR/PC: Parent Cognition Scale – Child-responsible/Parent-Causal subscale.

Discussion

Similar to prior research (e.g. Harrison and Sofronoff 2002; White and Barrowclough 1998), we found that higher levels of parental stress were related to higher perceptions of child behaviour problems. We did not find a relationship between the proportion of sessions parents attended and the baseline levels of child behaviour problems and parental stress levels. Contrary to other findings (e.g. Gopalan et al. 2010; Johnson et al. 2008), we found that neither baseline levels of child behaviour problems nor parental stress predicted premature dropout rates. This may be accounted for by the fact that only 17% of eligible families did not complete the intervention.

Other than parent age, we did not find that completion status was predicted by any demographic variable (e.g. child age, gender of parents or child, ethnicity, marital status), the level of severity of baseline child behaviour problems, nor the level of parental stress. The narrow age range of the indexed children in this study may explain this finding in relation to child age. Our findings that child gender was not associated with outcome (including attrition) are in line with some similar studies (e.g. Beauchaine et al. 2005) but not others (e.g. Gardner et al. 2010). In contrast to other research (e.g. see Lundahl et al. 2006; Menting et al. 2013), the lack of moderator effects in this study could be attributed to children of families attending a community-based preventative intervention being less likely to have extreme levels of psychopathology or particular demographic characteristics (e.g. single mothers).

The IY programme in this study was primarily used as a preventative intervention in a non-clinical sample, which might explain why a large proportion of parents indicated that neither their child's behaviour, nor their parental level of

stress, was above a clinically significant threshold. This is appropriate when we consider that, in addition to providing more families with evidence-based interventions, prevention research must include investigations of how to reach those families at risk but who do not yet meet diagnostic criteria and, therefore, do not attend clinic services (Hanisch et al. 2014). Most families (81%) attended more than half of the sessions, indicating a significant level of perceived need that is, perhaps, unsurprising given Coleman and Karraker's (1998) assertion that parenting is one of the most challenging social roles a human can have.

It is difficult to ascertain a benchmark for the level of IY attendance (see Menting et al. 2013), but a mean attendance of 10.3 sessions out of a possible 14 seems relatively high (e.g. Homem et al. 2014 regarded 11 out of 14 as a proportionately high level of attendance). Reasons for high attendance in the present study could be attributed to the various strategies used to improve engagement and retention, such as home visits to parents at the beginning of the intervention, offering catch up sessions to those who missed sessions, providing refreshments, childcare and transport/reimbursement of travel costs.

In this study, we did not look specifically at *why* parents chose to spend almost four months attending weekly sessions of a community-based parenting programme or, indeed, why some dropped out. Some reasons for attrition were indicated on attendance sheets or by unsolicited reports from group leaders (e.g. moving home, changing employment, and family/personal reasons), but it is also possible that some had achieved their goals early and felt no further need to attend (see Sanders et al. 2002 population-based approach and the *principle of sufficiency*). These reasons may account for the finding that younger parents were more likely to

drop out of the intervention. Alternatively, some families may have decided that the programme did not address their needs (particularly if they held child-responsibility attributions, believing that the children were to blame for their poor behaviour). On the other hand, highly motivated parents have higher levels of attendance and, therefore, treatment dosage, which may lead to improved outcomes (Lanier et al. 2011; Menting et al. 2013).

We also found that parental attributions (both parent-causal and child-responsibility) and attachment insecurity were significantly associated with baseline measures of child behaviour problems. In addition, we investigated and found support for our hypothesis that the relationship between attachment insecurity (both anxiety and avoidance) and child behaviour problems was mediated by child-responsibility attributions. This indicates that, while insecure attachment is thought to remain relatively stable (Fraley and Shaver 2000; Hazan and Shaver 1987), the relationship between insecure attachment and child externalising behaviour problems may be influenced by parental attributions.

In our supplementary analysis, we found improvement not only for externalising behaviour and parental stress levels, but also for parental attributions for those parents who completed both pre and post-intervention measures. This implies that parents may have come to hold themselves less responsible for their child's behaviours after intervention. Furthermore, lower post-intervention scores on the child-responsible subscale suggest that parents may have been less likely to attribute their child's misbehaviour to controllable dispositional traits at the end of the intervention than pre-intervention (Mattek et al. 2016). Our finding that child-responsibility attributions mediated the relationship between attachment insecurity

and child behaviour may indicate that PMT could be more effective by targeting such attributions (for reviews see Mah and Johnston 2008; Sawrikar and Dadds 2017). However, it is likely to be important to develop more complex theoretical models to examine the effects of moderators and to explore different mechanisms of moderator groups (Gardner et al. 2010). Understanding how mediators and moderators work might allow programmes to be tailored by ensuring the most effective ingredients are used depending on specific parent, child and therapeutic characteristics (Beauchaine et al. 2005).

Limitations and methodological considerations

The primary limitations of this study include a reliance on parental self-report measures, an underrepresentation of fathers and single parents, and the collection of measures at only two time points. Following an account of these limitations below, the challenges and advantages of studying community-based interventions are discussed.

Self-report

All measures used in this study have been shown to be valid and reliable, and the two main outcome measures (the ECBI and the PSI-SF) have been extensively used in the parenting literature. However, a general criticism of many parenting studies, pointed out by Weersing and Weisz (2002), is that overreliance on parental self-report can lead to interpretation difficulties, shared method bias and reporter bias. Self-report measures have also been criticised in relation to how the dimensions of the attachment behavioural system are operationalised (Fraley et al. 2000). On the other hand, parental cognitions are probably best assessed by parent report (Sanders

and Dadds 1992), and there is a large and growing literature advocating the use of self-report measures of adult attachment (Fraley and Spieker 2003; Jones et al. 2015). In relation to child behaviour, triangulating parents' reports could be achieved through independent observation of child behaviour and by reports from independent sources (e.g. pre-school teachers, or another caregiver), which would strengthen the findings and lead to more reliable estimations of intervention effects. Such methods were not practical in the present study.

Under-representation of fathers and single parents

In terms of gender, the vast majority of the sample were mothers (91%) and, of the indexed children, there were more boys (66%) than girls. This latter finding is often the case in this type of study (Beauchaine et al. 2005), and is reflective of the ratio of boys to girls who have conduct problems (NICE 2013). Of more concern is the small proportion of fathers who took part (only 8% of the total sample), less than the reported proportion of fathers who attend parenting groups generally (15-21%; Triemstra et al. 2017). This may be indicative of the work that is still required to engage fathers both in parenting groups and in research in relation to their children. The greater numbers of female attendees and group leaders may reflect a general belief that PMT is primarily for mothers (Triemstra et al. 2017), despite an increasing recognition of the fundamental role that fathers can play in supporting child development outcomes (for a review, see Lamb 2010). In order to attract more fathers to take part in both parenting interventions and research, it may be helpful for male group leaders (some of whom may be fathers) to deliver groups, for advertising to include both pictures of fathers and testimonials from fathers, for fathers to be personally invited to attend interventions, and for the important role of fathers to be

highlighted more generally across society (Homem et al. 2014; see also Fabiano 2007 and Triemstra et al. 2017 for further recommendations on engaging fathers in interventions in relation to their children).

Similarly, our study primarily included two-parent families, with a small proportion (25%) of single-parent families. While this is much higher than the UK average for preschool children (7%; Gardner et al. 2010), Lundahl et al. (2006) found that 36.3% (SD 20.78) of parents participating in parent training were single.

Two time points

As highlighted in the systematic review within this thesis, statistical mediation assumes both causal and temporal ordering of the independent variable, mediator, and dependent variables (Gunzler et al. 2013; MacKinnon 2008; Preacher and Hayes 2008; Patel et al. 2017). Mediation needs temporal precedence from X to M to Y (MacKinnon et al. 2007), and several authors have suggested that mediation analyses require at least three measurement points (e.g. Cole and Maxwell 2003; Kazdin 2007). The current study had only two time points: due to attrition at post-measurement, a cross-sectional mediation analysis was carried out to ensure adequate power. This meant that X, M and Y were all measured at baseline, with no follow-up data collection. As such, we cannot say whether the relationships between predictors, mediators, moderators and outcomes changed over time, nor whether improvements in parenting and child behaviour were sustained over a longer period (Jones et al. 2007; Posthumus et al. 2012; Webster-Stratton et al. 2011).

Longitudinal studies of PMT are only worth doing if the treatment is effective and it is, therefore, important to establish whether the intervention was conducted according to intended processes (i.e. with fidelity) (Fixsen et al. 2013). For example,

Gardner et al. (2010) suggested that low fidelity might reduce the measurable influence of mediator, moderator and predictor variables. In this study, programme fidelity was measured using self-rated group-leader fidelity checklists produced by the programme developer (see Appendix 12). While self-reported fidelity measures are best used in conjunction with independent verification (e.g., by experienced clinicians reviewing practitioners practice of filmed sessions of groups; Eames et al. 2007; Hutchings et al. 2007), these checklists clearly showed that busy practitioners found it challenging to implement best practice procedures and some missed out or reduced the number of role play practices, home activities, and weekly phone calls.

Challenges and advantages of studying community-based interventions

Attrition is particularly problematic in community-based studies (Stattin et al. 2015) and can lead to reduced statistical power and limited external validity of the data (Kazdin 1996). In this study, almost a third of parents who attended the first session chose not to take part in this study (125 took part out of 186 parents). Post-intervention data was available for just over half of the participating parents, with some of this loss due almost a fifth of parents dropping out of the intervention, a similar proportion to other studies (e.g. Hutchings et al. 2007 found 17% dropout; Scott et al. 2010 found 19% dropout). Further, those families that chose not to return to the intervention also tended to not return for assessment, highlighting a key challenge of studying attrition (Fernandez and Eyberg 2009). As the systematic review highlights, researchers are increasingly using more sophisticated methods of analysis to explore more complex mediation models. In contrast, the most basic mediation model was used in the present study and is likely to be an

oversimplification (Hayes 2018) of the mechanisms at play between attachment style, dysfunctional parental attributions and child behaviour problems.

Many of the limitations discussed above were the result of practical issues relating to the observational study of a community-based intervention. Due to time and resource constraints, it was not possible to recruit a larger sample size at baseline, nor use more intensive methods of follow-up for non-completion families. Similarly, some tools such as the AAI, though considered to be robust (Jones et al. 2015), were judged to be too resource intensive and too intrusive.

Given the challenges mentioned above, it is unsurprising that only a small number of studies have explored mediators and moderators of outcomes related to externalising behaviour problems, particularly in parenting interventions delivered in “real world” settings (Gardner et al. 2010; Hutchings et al. 2007). Appropriately designed studies and adequate sample sizes are important to ensure that findings are sound (Gardner et al. 2010; MacKinnon et al. 2007). However, as Reid (2013) reminded us, the measurement of different underlying mechanisms from “contextually embedded perspectives” (p. 337) as they play out in ecologically valid settings, are critical to person-centred approaches to research. This study was conducted under real world conditions, assessing routine provision of an evidence-based group parenting intervention, across three local authorities (rural, semi-rural and urban), and covering a wide geographical area. The programme was also delivered by regular, community-based service staff, which strengthens the ecological validity of findings. Further, exploring under-studied variables such as parental attributions and parental attachment styles in this context offers a potentially important initial exploration.

Future studies

Replication of this study with a larger sample, with more fathers and single parents is recommended. A longitudinal design that uses more complex mediation models, (e.g. where attachment insecurity transmits its effect on child behaviour through multiple mediators) could lead to important insights into mechanisms of change (Hayes 2018). More complex designs might allow subsequent exploration of targeting parental attributions in parent training programmes. However, we would caution that adding elements to a programme should not interfere with its feasibility within Tier II community and primary care settings. Such research would also benefit from including more robust treatment integrity checks and from examining parental engagement beyond attendance. Further, future studies could establish the reasons for attrition in order to explore these as risk factors in intervention research and to enhance our understanding of how parents at risk of dropping out might be supported to remain engaged. Finally, while future studies could benefit from larger sample sizes in order to overcome the known problem of dropout and to retain sufficient temporal ordering and power, this should be balanced with the practical challenges and potential advantages of studying mechanisms of change in real world settings.

Conclusion

Identifying predictors, moderators and mediators that relate to child externalising behaviour problems and parental characteristics and cognitions can inform developments of PMT to meet the particular needs of different families. For example, while attachments styles are considered to remain relatively fixed across an individual's lifespan (Bowlby 1988), dysfunctional attributions may be more amenable to manipulation through intervention (Sawrikar and Dadds 2017). Our

finding that parental attributions mediated the relationship between attachment insecurity and externalising child behaviour problems highlights the significance of considering these factors in the delivery of evidence-based parenting programmes.

Future research could investigate the practical potential of targeting attributions in a community-based setting. However, when adding elements or adapting programmes attention should be given to ensuring interventions are delivered with fidelity and that they are accessible to both mothers and fathers.

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Appendix 1. Systematic review protocol

PROSPERO
International prospective register of systematic reviews



UNIVERSITY of York
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Systematic review

Please complete all mandatory fields below (marked with an asterisk *) and as many of the non-mandatory fields as you can then click *Submit* to submit your registration. You don't need to complete everything in one go, this record will appear in your *My PROSPERO* section of the web site and you can continue to edit it until you are ready to submit. Click *Show help* below or click on the icon to see guidance on completing each section.

This record cannot be edited because it has been rejected

1. * Review title.

Give the working title of the review, for example the one used for obtaining funding. Ideally the title should state succinctly the interventions or exposures being reviewed and the associated health or social problems. Where appropriate, the title should use the PI(E)COS structure to contain information on the Participants, Intervention (or Exposure) and Comparison groups, the Outcomes to be measured and Study designs to be included.

A systematic review of the role of parental cognitions: mediators between parenting and child behavioural problems

2. Original language title.

For reviews in languages other than English, this field should be used to enter the title in the language of the review. This will be displayed together with the English language title.

3. * Anticipated or actual start date.

Give the date when the systematic review commenced, or is expected to commence.

01/01/2018

4. * Anticipated completion date.

Give the date by which the review is expected to be completed.

01/03/2018

5. * Stage of review at time of this submission.

Indicate the stage of progress of the review by ticking the relevant Started and Completed boxes. Additional information may be added in the free text box provided.

Please note: Reviews that have progressed beyond the point of completing data extraction at the time of initial registration are not eligible for inclusion in PROSPERO. Should evidence of incorrect status and/or completion date being supplied at the time of submission come to light, the content of the PROSPERO record will be removed leaving only the title and named contact details and a statement that inaccuracies in the stage of the review date had been identified.

This field should be updated when any amendments are made to a published record and on completion and publication of the review.

The review has not yet started: No

PROSPERO
International prospective register of systematic reviews

Review stage	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	Yes	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Provide any other relevant information about the stage of the review here (e.g. Funded proposal, protocol not yet finalised).

6. * Named contact.

The named contact acts as the guarantor for the accuracy of the information presented in the register record.
Kirsty Fawns

Email salutation (e.g. "Dr Smith" or "Joanne") for correspondence:
Mrs Fawns

7. * Named contact email.

Give the electronic mail address of the named contact.
k.fawns@sms.ed.ac.uk

8. Named contact address

Give the full postal address for the named contact.
Department of Clinical and Health Psychology, University of Edinburgh, Medical School, Teviot Place,
Edinburgh, EH8 9AG

9. Named contact phone number.

Give the telephone number for the named contact, including international dialling code.
+44 (0)131 650 3892

10. * Organisational affiliation of the review.

Full title of the organisational affiliations for this review and website address if available. This field may be completed as 'None' if the review is not affiliated to any organisation.
The University of Edinburgh

Organisation web address:
<http://www.ed.ac.uk/health>

11. Review team members and their organisational affiliations.

Give the title, first name, last name and the organisational affiliations of each member of the review team. Affiliation refers to groups or organisations to which review team members belong.

Mrs Kirsty Fawns. The University of Edinburgh
Dr Emily Taylor. The University of Edinburgh
Ms Ailsa Morrison. The University of Edinburgh

12. * Funding sources/sponsors.

Give details of the individuals, organizations, groups or other legal entities who take responsibility for initiating, managing, sponsoring and/or financing the review. Include any unique identification numbers assigned to the review by the individuals or bodies listed.

The principal researcher is employed by NHS Lothian as a Trainee Clinical Psychologist, and her training programme is funded by NHS Education for Scotland, however this review is not funded.

13. * Conflicts of interest.

List any conditions that could lead to actual or perceived undue influence on judgements concerning the main topic investigated in the review.

None

14. Collaborators.

Give the name and affiliation of any individuals or organisations who are working on the review but who are not listed as review team members.

15. * Review question.

State the question(s) to be addressed by the review, clearly and precisely. Review questions may be specific or broad. It may be appropriate to break very broad questions down into a series of related more specific questions. Questions may be framed or refined using PI(E)COS where relevant.

What are the mediators being examined in studies that explore parental cognitions and child externalising behaviour problems?

What theoretical frameworks are being used to link mediating variables to parental cognitions and externalising behaviour problems?

How are parental cognitions operationalised (i.e. what measures are used) in relation to child externalising problems?

16. * Searches.

Give details of the sources to be searched, search dates (from and to), and any restrictions (e.g. language or publication period). The full search strategy is not required, but may be supplied as a link or attachment.

A systematic search will be conducted of empirical studies reporting links between parents' cognitions in relation to childrens' externalising behaviour problems (e.g. aggression, oppositional-defiant behaviour, attention deficit hyperactivity disorder), using mediation analysis (or a derivative of this search term). Three online databases within the OVID online search portal: PsycINFO, Embase, MEDLINE will be searched. Searches will be carried out in January 2018. No time limit will be used for the search.

No language restrictions will be employed on any search results, although only English-language databases will be included. Studies written in a language other than English will be translated if considered relevant from the abstract and title within the limitations of access to interpreters. This review is limited to published peer reviewed journals only. Dissertations, conference abstracts and posters will be excluded. Additionally, studies will be excluded if they were reviews, books and book chapters.

17. URL to search strategy.

Give a link to the search strategy or an example of a search strategy for a specific database if available (including the keywords that will be used in the search strategies).

Alternatively, upload your search strategy to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

Yes I give permission for this file to be made publicly available

18. * Condition or domain being studied.

Give a short description of the disease, condition or healthcare domain being studied. This could include health and wellbeing outcomes.

Children with externalising behavioural problems (e.g. aggression, noncompliance, defiance, oppositional behaviour, often called conduct problems). Parents cognitions regarding both their child's and their own behaviour. This includes parental attributions, how parents make sense of or understand their child's behaviour, and includes their beliefs about the cause of such behaviour. In addition, parent's beliefs regarding their own behaviour such as parental self-efficacy, competence and self-esteem. Mediation analysis offers an opportunity to explore the relationship between the constructs of parental cognitions and child externalising behaviour problems.

19. * Participants/population.

Give summary criteria for the participants or populations being studied by the review. The preferred format includes details of both inclusion and exclusion criteria.

Inclusion: Parents of children aged between 2-12 years old. There are no restrictions on gender of the parent or the child, nor the geographical location of the study participants.

Exclusion: studies that do not identify targeted populations related to child externalising behaviour problems; adolescents (i.e. children 13 years old and older); parents of children with physical health conditions (e.g. obesity, asthma, cancer), internalizing problems (e.g. anxiety), autism spectrum disorder, or other developmental disabilities; parents with mental health disorders such as psychosis or bipolar disorder or those parents in highly disadvantaged circumstances (e.g. parents who are in prison, were exposed to domestic violence, or abuse substances) will also be excluded.

20. * Intervention(s), exposure(s).

Give full and clear descriptions or definitions of the nature of the interventions or the exposures to be reviewed.

Studies will be included irrespective of intervention quality/characteristics.

21. * Comparator(s)/control.

Where relevant, give details of the alternatives against which the main subject/topic of the review will be compared (e.g. another intervention or a non-exposed control group). The preferred format includes details of both inclusion and exclusion criteria.

None.

22. * Types of study to be included.

Give details of the types of study (study designs) eligible for inclusion in the review. If there are no restrictions on the types of study design eligible for inclusion, or certain study types are excluded, this should be stated. The preferred format includes details of both inclusion and exclusion criteria.

This review aims to identify and evaluate any peer reviewed quantitative studies that have utilised mediation analysis to explore the relationship between parental cognitions and child externalising behaviour problems. Studies where child externalising behaviour problems (using a validated measure) is the dependent variable and where parental cognitions (using a validated measure) are either the independent variable or the mediator will be included. Studies will be included irrespective of design e.g. cross-sectional, experimental, longitudinal, pre- and post-, Randomized controlled trials (RCTs) or non-randomized, and irrespective of control arm type (e.g. treatment as usual, no treatment, wait-list control).

Reviews, professional opinions, editorial publications, book chapters, dissertations and unpublished work will not be included.

23. Context.

Give summary details of the setting and other relevant characteristics which help define the inclusion or exclusion criteria.

This review is primarily interested in parents' perceptions. As such studies that include both parent-report ~~Studies relating to child externalising behaviour problems and parental cognitions~~ will be included.

24. * Primary outcome(s).

Give the pre-specified primary (most important) outcomes of the review, including details of how the outcome is defined and measured and when these measurement are made, if these are part of the review inclusion criteria.

This review aims to identify studies that use mediation analysis to explore the relationships between parental cognitions and externalising behavioural problems in children. This review will systematically explore research that has examined parental cognitions, in relation to child externalising problems, as a predictor, moderator, mediator or outcome variable. As our question also includes how parental cognitions are conceptualised and measured, we do not presuppose these in the selection stage. It is anticipated there will be a range of terminology and conceptual definitions used in this parenting research which are used interchangeably and inconsistently which can lead to confusion regarding which measures should be used and the theoretical frameworks which relate to these (Vance & Brandon, 2017; Wittkowski, Garrett, Calam & Weisberg, 2017).

Timing and effect measures

Although mediation is supposed to use temporal ordering of measures, this is not always the case (e.g. Park et al., 2016). Therefore, studies will be included irrespective of the number of measurement time points (but this will be appraised in the quality criteria).

25. * Secondary outcome(s).

List the pre-specified secondary (additional) outcomes of the review, with a similar level of detail to that required for primary outcomes. Where there are no secondary outcomes please state 'None' or 'Not applicable' as appropriate to the review

The quality of studies conducted in this area.

Timing and effect measures

26. Data extraction (selection and coding).

Give the procedure for selecting studies for the review and extracting data, including the number of researchers involved and how discrepancies will be resolved. List the data to be extracted.

Based on the inclusion and exclusion criteria, the first author (KF) will select and screen studies obtained from the systematic search. Results will be exported to Covidence and Mendeley where duplicates will be removed. Only articles meeting the inclusion criteria will be retained.

Full articles will be reviewed to establish eligibility by the first author. This process will be recorded and checked="checked" value="1" with the study supervisor. Full articles being retained will have the following data extracted using a pro-forma: Author(s), Country of Research, Design, Sample Source, Sample size (female child n; % mothers), Sample Age Child (Range, Mean, SD), Measure of child behaviour, Measure of parent cognition, Mediator construct, Measure of mediator, Mediation analysis, Intervention, Cognition Construct and Theories. Data will be extracted by the first author (KF) and the third author will independently rate a proportion of these.

27. * Risk of bias (quality) assessment.

State whether and how risk of bias will be assessed (including the number of researchers involved and how discrepancies will be resolved), how the quality of individual studies will be assessed, and whether and how this will influence the planned synthesis.

Methodological quality of studies will be assessed by the first author (KF) based on previously used criteria used in recent systematic reviews exploring mediation analyses (Buckley, 2017; Lee et al., 2015). This encompasses recommendations highlighted in the The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement (Checklist of Items That Should Be Addressed in Reports of Observational Studies; Vandembroucke et al., 2007). The scores range from 0 to 2, with a score of two indicative of good methodological quality. The third author (AM) will assess 50% of studies. Disagreements between the first and third author with respect to will be solved through discussion with the second author (ET).

Buckley, Sarah. (2017) Attachment Style and Depression: An Investigation into Interpersonal Factors and Processes. Doctoral Thesis. University of Edinburgh.
Lee, H., Hübscher, M., Moseley, G. L., Kamper, S. J., Traeger, A. C., Mansell, G., and McAuley, J. H. (2015). How does pain lead to disability? A systematic review and meta-analysis of mediation studies in people with back and neck pain. *Pain*, 156(6), 988-997.
Vandenbroucke JP, Elm EV, Altman DG, Gotzsche PC, Mulrow CD, Pocock SJ, et al. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE): Explanation and Elaboration. *Ann Intern Med*. 2007;147:W-163-W-194.

28. * Strategy for data synthesis.

Give the planned general approach to synthesis, e.g. whether aggregate or individual participant data will be used and whether a quantitative or narrative (descriptive) synthesis is planned. It is acceptable to state that a quantitative synthesis will be used if the included studies are sufficiently homogenous.
Due to the heterogeneity of studies (different samples, measures and designs), a narrative synthesis will be conducted rather than a meta-analysis.

29. * Analysis of subgroups or subsets.

Give details of any plans for the separate presentation, exploration or analysis of different types of participants (e.g. by age, disease status, ethnicity, socioeconomic status, presence or absence or co-morbidities); different types of intervention (e.g. drug dose, presence or absence of particular components of intervention); different settings (e.g. country, acute or primary care sector, professional or family care); or different types of study (e.g. randomised or non-randomised).
None planned.

30. * Type and method of review.

Select the type of review and the review method from the lists below. Select the health area(s) of interest for your review.

Type of review

Cost effectiveness

No

Diagnostic

No

Epidemiologic

No

Individual patient data (IPD) meta-analysis

No

Intervention

No

Meta-analysis

No

Methodology

No

Network meta-analysis

No

Pre-clinical

No

Prevention

No

Prognostic

No

Prospective meta-analysis (PMA)

PROSPERO
International prospective register of systematic reviews

No
Qualitative synthesis
No
Review of reviews
No
Service delivery
No
Systematic review
Yes
Other
No

Health area of the review

Alcohol/substance misuse/abuse
No
Blood and immune system
No
Cancer
No
Cardiovascular
No
Care of the elderly
No
Child health
Yes
Complementary therapies
No
Crime and justice
No
Dental
No
Digestive system
No
Ear, nose and throat
No
Education
No
Endocrine and metabolic disorders
No
Eye disorders
No
General interest
No
Genetics
No
Health inequalities/health equity
No
Infections and infestations
No
International development

No
Mental health and behavioural conditions
No
Musculoskeletal
No
Neurological
No
Nursing
No
Obstetrics and gynaecology
No
Oral health
No
Palliative care
No
Perioperative care
No
Physiotherapy
No
Pregnancy and childbirth
No
Public health (including social determinants of health)
No
Rehabilitation
No
Respiratory disorders
No
Service delivery
No
Skin disorders
No
Social care
No
Surgery
No
Tropical Medicine
No
Urological
No
Wounds, injuries and accidents
No
Violence and abuse
No

31. Language.

Select each language individually to add it to the list below, use the bin icon to remove any added in error.
English

There is an English language summary.

32. Country.

Select the country in which the review is being carried out from the drop down list. For multi-national collaborations select all the countries involved.

Scotland

33. Other registration details.

Give the name of any organisation where the systematic review title or protocol is registered (such as with The Campbell Collaboration, or The Joanna Briggs Institute) together with any unique identification number assigned. (N.B. Registration details for Cochrane protocols will be automatically entered). If extracted data will be stored and made available through a repository such as the Systematic Review Data Repository (SRDR), details and a link should be included here. If none, leave blank.

34. Reference and/or URL for published protocol.

Give the citation and link for the published protocol, if there is one

Give the link to the published protocol.

Alternatively, upload your published protocol to CRD in pdf format. Please note that by doing so you are consenting to the file being made publicly accessible.

Yes I give permission for this file to be made publicly available

Please note that the information required in the PROSPERO registration form must be completed in full even if access to a protocol is given.

35. Dissemination plans.

Give brief details of plans for communicating essential messages from the review to the appropriate audiences.

The completed review will be submitted for publication to a peer-reviewed journal.

Do you intend to publish the review on completion?

Yes

36. Keywords.

Give words or phrases that best describe the review. Separate keywords with a semicolon or new line. Keywords will help users find the review in the Register (the words do not appear in the public record but are included in searches). Be as specific and precise as possible. Avoid acronyms and abbreviations unless these are in wide use.

Child; Child Behaviour; Humans; Parenting; Parents; Cognitions; Attributions

37. Details of any existing review of the same topic by the same authors.

Give details of earlier versions of the systematic review if an update of an existing review is being registered, including full bibliographic reference if possible.

38. * Current review status.

Review status should be updated when the review is completed and when it is published.

Please provide anticipated publication date

Review_Ongoing

39. Any additional information.

Provide any other information the review team feel is relevant to the registration of the review.

40. Details of final report/publication(s).

This field should be left empty until details of the completed review are available.

Give the link to the published review.

Appendix 2. Systematic review search strategy

1	(parent* adj2 (attribution* or cognition* or attitude* or belief* or competen* or efficac* or effective*))
2	(child* adj2 (agressi* or oppositional or conduct or misconduct or external* or disruptive or behavio*))
3	1 and 2
4	(dissertation abstracts or dissertation abstracts international or "dissertation abstracts international section a humanities and social sciences" or "dissertation abstracts international section b the sciences and engineering").jn.
5	3 not 4
6.	(Mediat* or sobel* or "causal pathway" or "intermediate" or "indirect effect" or "process variable" or "process evaluation" or "mediation analysis" or "structural equation modelling" or "structural equation modeling" or "Baron and Kenny" or "Baron & Kenny" or "product of coefficient" or "difference in coefficient" OR "SEM" or "process of change" or "Preacher and Hayes" or "Preacher & Hayes" or bootstrap*)
7	5 and 6

Appendix 3. Quality criteria for the systematic review

1. A theoretical framework links the mediating variable to parental cognition and child externalising behaviour.	<p>Good: A clear theoretical framework links the mediating variable to both parental cognition and child externalising behaviour; and the study presents clear empirical evidence to support these links.</p> <p>Adequate: A theoretical framework has been used to link the mediating variable to parental cognition and child externalising behaviour but: this link is not supported by empirical evidence or there is evidence to support a theoretical link for some, but not all, relevant variables.</p> <p>Poor: Lacks a theoretical framework linking the mediating variable to child externalising behaviour and parental cognition.</p>
2. Does the study have a representative sample?	<p>Good: Participants form a sample that represents the population of interest in relation to the aims and hypotheses of the study.</p> <p>Adequate: Participants form a sample that is somewhat representative of the study's aims and hypotheses (e.g. primary school pupils to represent the wider school population).</p> <p>Poor: Participants form a sample that does not represent the study's aims and hypotheses (e.g. a clinical sample to represent a wider population).</p>
3. Does the study design allow causal inference?	<p>Good: A longitudinal design, experimental design, or randomized controlled trial is utilised, where temporal ordering of variables has been used.</p> <p>Adequate: A longitudinal design, experimental design, or randomized controlled trial is utilized, where some temporal ordering of variables (but not all) has been used.</p> <p>Poor: A cross sectional, or observational study design is utilised, and temporal ordering of variables has not been used.</p>
4. Does the study have clear inclusion/exclusion criteria?	<p>Good: A detailed inclusion and exclusion criteria is outlined.</p> <p>Adequate: Inclusion/exclusion criteria are not specifically outlined, although it is clear that participants were included or excluded based on certain conditions.</p> <p>Poor: Inclusion or exclusion criteria are not reported, and it is not clear whether any were employed.</p>
5. Measures of parental cognitions and externalising behaviour in children are valid and reliable.	<p>Good: Relevant measures have good psychometric properties (i.e. validity and reliability) in relation to the population under study. These are outlined in the study, or referred to in another peer-reviewed study.</p> <p>Adequate: Measures have reasonable psychometric properties (i.e. validity and reliability) for the population under study, or some but not all measures have good psychometric properties.</p> <p>Poor: Measures have good psychometric properties but have been translated or modified for the purposes of this study.</p>
6. Identification of potential confounding	<p>Good: Variables that may impact on results are identified and controlled for in terms of design (e.g. through sampling methods)</p>

variables are controlled for	<p>and statistical analysis.</p> <p>Adequate: Variables that impact on results are identified and controlled for in terms of design (e.g. through sampling methods) or statistical analysis, but not both.</p> <p>Poor: No potential confounding variables are identified or controlled for.</p>
7. Analysis method of mediation is robust and appropriate in relation to hypotheses of study.	<p>Good: Robust analysis method (e.g. product of coefficient) and a significance test where appropriate (e.g. bootstrapping), or SEM (and fit indices are reported).</p> <p>Adequate: Less robust analysis method (e.g. Baron and Kenny 1986) but includes a significance test (e.g. Sobel test) OR a more robust analysis method but no significance test.</p> <p>Poor: Less robust analysis method and no significance test (e.g. causal steps).</p>
8. A power calculation is reported and sample size is adequate for the study to be sufficiently powered for mediation.	<p>Good: Sample size is adequate and a power calculation is carried out, and/or the study is adequately powered (above .8).to detect mediation.</p> <p>Adequate: a power calculation is reported but the study is not adequately powered (below .8) to detect mediation or where no power calculation has been explicitly reported, but a <i>post hoc</i> calculation demonstrates the study is not adequately powered.</p> <p>Poor: No power calculation has been conducted and the study does not appear adequately powered.</p>

Quality criteria markings: 2 = good, 1 = adequate, 0 = poor; Based on Buckley (2017), Lee et al. (2015), and Mansell et al. (2014)

Appendix 4. Confirmation of ethical approval

Ethics: REC Reference 16/NW/0674

- Initial approval – 26th September 2016
- Non-substantial amendment – 24 October 2016
- Non-substantial amendment – 06 February 2017
- Non-substantial amendment – 13 March 2017
- Non-substantial amendment – 11 September 2017
- Substantial amendment – 31 January 2018

Initial approval - 26th September 2016



Health Research Authority

North West - Haydock Research Ethics Committee

3rd Floor - Barlow House
4 Minshull Street
Manchester
M1 3DZ

Telephone: 0207 104 8012

26 September 2016

Mrs Kirsty Fawns
Trainee Clinical Psychologist
NHS Lothian
CAMHS Tipperlinn Road
Royal Edinburgh Hospital
Edinburgh
EH105HF

Dear Mrs Fawns

Study title: Effectiveness of the Incredible Years parent training in reducing preschool behavioural problems: the role of parental cognitions/characteristics.
REC reference: 16/NW/0674
IRAS project ID: 212592

The Proportionate Review Sub-committee of the North West - Haydock Research Ethics Committee reviewed the above application on 20 September 2016.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this favourable opinion letter. The expectation is that this information will be published for all studies that receive an ethical opinion but should you wish to provide a substitute contact point, wish to make a request to defer, or require further information, please contact the REC Manager Ms Rachel Katzenellenbogen, nrescommittee.northwest-haydock@nhs.net. Under very limited circumstances (e.g. for student research which has received an unfavourable opinion), it may be possible to grant an exemption to the publication of the study.

Favourable opinion

On behalf of the Committee, the sub-committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA Approval (England)/ NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at <http://www.rdforum.nhs.uk>.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations.

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion").

Approved documents

The documents reviewed and approved were:

Document	Version	Date
Non-validated questionnaire [Non-validated questionnaire - Group leader demographic]	1	25 August 2016
Other [Validated questionnaire - MCQ 30 CSCS]	1	02 September 2016
Other [Validated questionnaire - PSI-SF]	1	02 September 2016
Other [Validated questionnaire - ECR-R]	1	02 September 2016
Other [Validated questionnaire - PCS]	1	02 September 2016
Other [Contact form - parent participants]	1	25 August 2016
Other [Non-validated questionnaire - carer demographic]	1	25 August 2016
Other [Validated questionnaire - IY fidelity]	1	02 September 2016
Other [Application clarification (email)]		12 September 2016
Participant consent form [Participant Consent Form]	1	25 August 2016
Participant information sheet (PIS) [Participant Information Sheet]	1	25 August 2016
Participant information sheet (PIS) [Group leader information sheet]	1	12 September 2016
REC Application Form [REC_Form_02092016]		02 September 2016
Research protocol or project proposal [Research Protocol]	1	25 August 2016
Summary CV for Chief Investigator (CI) [Chief Investigator CV]	1	08 August 2016
Summary CV for supervisor (student research) [Supervisor CV]	1	08 August 2016
Validated questionnaire [Validated questionnaire - ECBI]	1	02 September 2016

Membership of the Proportionate Review Sub-Committee

The members of the Sub-Committee who took part in the review are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

<http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

With the Committee's best wishes for the success of this project.

16/NW/0674	Please quote this number on all correspondence
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Yours sincerely



Dr Tim S Sprosen
Chair

Email: nrescommittee.northwest-haydock@nhs.net

Enclosures: List of names and professions of members who took part in the review

"After ethical review – guidance for researchers"

Copy to: Ms Charlotte Smith, University of Edinburgh

North West - Haydock Research Ethics Committee

Attendance at PRS Sub-Committee of the REC meeting on 20 September 2016

Committee Members:

Name	Profession	Present	Notes
Mr Stephen Edgar	Designer	Yes	
Miss Anna Sekula	Nurse	Yes	
Dr Tim S Sprosen	REC Chair - Epidemiologist	Yes	

Also in attendance:

Name	Position (or reason for attending)
Ms Rachel Katzenellenbogen	REC Manager

Non-substantial amendment – 24 October 2016

----- Forwarded message -----

From: **SMITH Charlotte** <Charlotte.Smith@ed.ac.uk>
Date: 24 October 2016 at 11:24
Subject: Non-substantial amendment 24 October 2016
To: Kirsty Fawns <kfawns78@gmail.com>
Cc: "Fawns, Kirsty" <Kirsty.Fawns@nhslothian.scot.nhs.uk>

Sponsor Amendment Classification

Title:	Effectiveness of the Incredible Years parent training in reducing preschool behavioural problems: the role of parental cognition/characteristics
REC Reference	16/NW/0674
Sponsor Reference:	Non-substantial amendment 1 – 24 Oct 2016
Chief Investigator:	Kirsty Fawns

Dear **Kirsty**,

I have reviewed your proposed changes as outlined in our previous correspondence.

I can confirm that in the opinion of the Sponsor's representative the following changes:

- *Minor change to wording of ECR-R questionnaire – 'others' to replace 'romantic partner'*

Comprise a **non-substantial amendment**.

Non-substantial amendment – 06 February 2017

----- Forwarded message -----

From: **SMITH Charlotte** <Charlotte.Smith@ed.ac.uk>
Date: 6 February 2017 at 14:05
Subject: Non-substantial amendment 06 Feb 2017
To: Kirsty Fawns <kfawns78@gmail.com>, "Fawns, Kirsty" <Kirsty.Fawns@nhslothian.scot.nhs.uk>

Sponsor Amendment Classification

Title:	Effectiveness of the Incredible Years parent training in reducing preschool behavioural problems: the role of parental cognitions/characteristics
---------------	--

REC Reference	16/NW/0674
Sponsor Reference:	Non-substantial amendment – 06 February 2017
Chief Investigator:	Kirsty Fawns

Dear **Kirsty**,

I have reviewed your proposed changes as outlined in our previous correspondence. .

I can confirm that in the opinion of the Sponsor's representative the following changes:

- *Minor change of wording to PIS (version numbers of protocol, PIS and consent form to be changed)*
- *Addition of site (Scottish Borders) with no change to study numbers*

Comprise a **non-substantial amendment**.

Non-substantial amendment – 13 March 2017

----- Forwarded message -----

From: **SMITH Charlotte** <Charlotte.Smith@ed.ac.uk>

Date: 13 March 2017 at 10:01

Subject: Non-substantial amendment 13 March 2017

To: Kirsty Fawns <kfawns78@gmail.com>

Cc: "Fawns, Kirsty" <Kirsty.Fawns@nhslothian.scot.nhs.uk>

Sponsor Amendment Classification

Title:	Effectiveness of the Incredible Years parent training in reducing preschool behavioural problems: the role of parental cognitions/characteristics
REC Reference	16/NW/0674
Sponsor Reference:	Non-substantial amendment – 13 March 2017
Chief Investigator:	Kirsty Fawns

Dear **Kirsty**,

I have reviewed your proposed changes as outlined in our previous correspondence. .

I can confirm that in the opinion of the Sponsor's representative the following changes:

- ☐ CAMHS employee (employed by the NHS) to assist with study procedures (no change to PI)

Comprise a **non-substantial amendment**.

Non-substantial amendment 11 September 2017

From: SMITH Charlotte

Sent: 11 September 2017 14:14

To: Fawns, Kirsty; FAWNS Kirsty

Cc: TAYLOR Emily

Subject: Non-substantial amendment 11 September 2017

Sponsor Amendment Classification

Title:	Effectiveness of the Incredible Years parent teaching in reducing preschool behavioural problems: the role of parental cognition/characteristics
REC Reference	16/NW/0674
Sponsor Reference:	Non-substantial amendment 11 September 2017
Chief Investigator:	Kirsty Fawns

Dear **Kirsty**,

I have reviewed your proposed changes as outlined in our previous correspondence. .

I can confirm that in the opinion of the Sponsor's representative the following changes:

☐ ***Addition of non-NHS site (Scottish Borders Council) with no change to study numbers***

Comprise a **non-substantial amendment**.

North West - Haydock Research Ethics Committee

3rd Floor - Barlow House
4 Minshull Street
Manchester
M1 3DZ

Tel: 0207 104 8004

31 January 2018

Mrs Kirsty Fawns
Trainee Clinical Psychologist
NHS Lothian
CAMHS Tipperlinn Road
Royal Edinburgh Hospital
Edinburgh
EH105HF

Dear Mrs Fawns

Study title: Effectiveness of the Incredible Years parent training in reducing preschool behavioural problems: the role of parental cognitions/characteristics.
REC reference: 16/NW/0674
Amendment number: 2
Amendment date: 12 January 2018
IRAS project ID: 212592

The above amendment was reviewed by the Sub-Committee in correspondence.

Favourable opinion

This amendment sought to add an additional reminder letter/email that would be sent to the final cohort of parents to remind them to return the three final post group questionnaires if they have not returned them within 2 weeks.

No material ethical issues were raised.

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
Notice of Substantial Amendment (non-CTIMP)	2	12 January 2018
Other [Final questionnaire reminder letter/email]	1	12 January 2018
Research protocol or project proposal	3	12 January 2018

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

We are pleased to welcome researchers and R&D staff at our Research Ethics Committee members' training days – see details at <http://www.hra.nhs.uk/hra-training/>

16/NW/0674:	Please quote this number on all correspondence
-------------	--

Yours sincerely



PP Dr Tim Sprosen
Chair

E-mail: nrescommittee.northwest-haydock@nhs.net

Copy to: Mrs Kirsty Fawns, NHS Lothian

North West - Haydock Research Ethics Committee

Attendance at Sub-Committee of the REC meeting on 30 January 2018

Committee Members:

Name	Profession	Present	Notes
Dr Ben Johnson	Vice-Chair - Consultant Psychiatrist	Yes	
Mr Charles Otim	Research Support Officer	Yes	

Also in attendance:

Name	Position (or reason for attending)
Ms Laila Sarwar	REC Assistant

Appendix 5. Permission from local authorities

Permission from The City of Edinburgh Council



Mrs Kirsty Fawns

Date 24/10/16

Our ref MG/AF

Direct dial 0131 469 2803

Dear Kirsty,

I am writing in response to your application requesting permission to undertake research in schools in The City of Edinburgh.

Your request has been considered, and I am pleased to inform you that you have been given permission in principle to undertake your research. I must stress that it is the policy of this Authority to leave the final decision about participation in research projects of this kind to Head Teachers and their staff, so that approval in principle does not oblige any particular establishment to take part.

I request that you forward a copy of your completed findings to me when they become available. In this case an electronic summary of your thesis would be preferred. Your work may be of interest to a number of staff in the Communities and Families Department.

I would like to thank you for contacting the Communities and Families Department about your work, and wish you every success in the completion of your project.

Yours sincerely

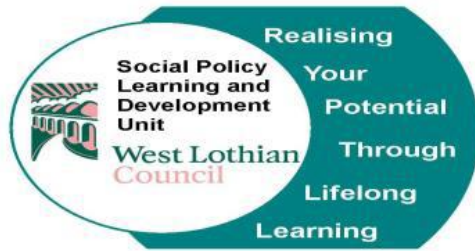
Martin Gemmell
Principal Psychologist

Psychological Services, Children's Services
Level 1.9 Waverley Court, 4 East Market Street, Edinburgh EH8 8BG

Tel 0131 469 2803 E-mail anne.fitzpatrick@ea.edin.sch.uk



Permission from West Lothian Council



Social Policy
Learning & Development Team
Arrochar House
Almondvale Boulevard
Livingston.
EH54 6QJ

Kirsty Fawns
Trainee Clinical Psychologist
NHS Lothian CAMHS
Royal Edinburgh Hospital
Tipperlinn Road
Edinburgh
EH10 5HF

23 January 2017

Dear Kirsty

RE: RESEARCH PROPOSAL

In connection with your recent research application, I am pleased to advise that you have been given approval to proceed. This approval is conditional, based on the following:

- The involvement and regular communication with your nominated research manager who is Manager Children & Young People-Parenting Team will be the manager overseeing the project with Susan Duffy being the link person for the project.
- That upon completion of your research, your report/finding are made available to West Lothian Council's social policy sector, which you are required to send to me at the above address.

Your research report will be added to our research database for dissemination and use by West Lothian Council. I wish you well with your research and look forward to receiving your report in due course.

Yours faithfully

Catherine Robertson

Learning & Quality Assurance Advisor
Social Policy

Permission from Scottish Borders Council

From: Hutton, Marjorie <mhutton@scotborders.gov.uk>

Sent: 25 August 2017 12:34

To: FAWNS Kirsty

Cc: Barrow, Roger; Frew, Grace; Connor, Marcia; McGarry, Oonagh; Houston-Fiona-CNM-Hawick Health Centre (NHS Staff); Marples, Rachael; Milanesi, Paula (NHS Staff)

Subject: RE: IY Preschool Research

Dear Kirsty,

Thank-you for this information. We discussed your research at the PoPP Operational Group meeting this morning. The group are fully supportive of your research. Roger Barrow, who chairs the group is also informing the Children and Young People's Leadership Group (Community Planning Partnership Gr) through the chair of our strategic Early Years Gr.

We are currently finalising start dates for groups and will let you know of these asap. We feel that the best way to ask the pre-questionnaires is at the introductory days that IY groups tend to have prior to the proper week one group meeting. I will speak to group leaders and get back to re this. It is our intention that groups start first or second week of Sept, which is not long. I'll speak to you soon re all of this when we have confirmation of definite dates and times.

Kind regards,
Marj.

Marjorie Hutton
Early Years Strategy Officer
Scottish Borders Council
Tel: 01835 824000 Ext: 5812
Mob: 07805 736 716

Early Years email : earlyyearsteamed@scotborders.gcsx.gov.uk

Appendix 6. Permission from authors of questionnaires.

Permission from authors of MCQ-30 questionnaire

From: **Kirsty Fawns** <kfawns78@gmail.com>

Date: Tuesday, 26 July 2016

Subject: The MCQ 30

To: Adrian Wells <adrian.wells@manchester.ac.uk>

Thank you so much Professor Wells. I do indeed have a copy.

Kind regards, Kirsty Fawns

On 26 Jul 2016 1:24 pm, "Adrian Wells" <adrian.wells@manchester.ac.uk> wrote:

Dear Kirsty,

Thank you for your request. I hereby grant permission for you to use the MCQ30 or its subscales in your research. Do you have a copy of the scale?

regards

Adrian

Adrian Wells, Ph.D

Professor of Clinical and Experimental Psychopathology

University of Manchester

School of Psychological Sciences

Section of Clinical and Health Psychology

Rawnsley Building

MRI

Manchester

M13 9WL

From: Kirsty Fawns [kfawns78@gmail.com]

Sent: 25 July 2016 20:57

To: Adrian Wells

Subject: The MCQ 30

Dear Professor Wells,

I am writing to ask for permission to use the MCQ-30 Cognitive Self Consciousness subscale from your paper:

Wells, A., & Cartwright-Hatton, S. (2004). A short form of the metacognitions questionnaire: properties of the MCQ-30. *Behaviour Research and Therapy*, 42, 385–396.

I am interested in using your questionnaire as part of my thesis project which is exploring the effectiveness of an evidence-based parenting programme (the Incredible Years parent training in reducing preschool behavioural problems), as well as the role of parental cognitions/characteristics in treatment engagement and attrition.

I look forward to hearing from you.

Kind regards,
Kirsty Fawns

Trainee Clinical Psychologist
NHS Lothian/University of Edinburgh
Supervised by Dr Emily Taylor, Lecturer in Clinical Psychology

Permission from authors of Parent Cognition Scale questionnaire

From: **Amy Slep** <amy.slep@nyu.edu>

Date: 3 August 2016 at 17:53

Subject: Re: Parent Cognition Scale - permission to use

To: Kirsty Fawns <kfawns78@gmail.com>

Hi-

You are welcome to use the scale in your research. Best of luck!

-a

Amy M. Smith Slep, Ph.D.

Professor

Family Translational Research Group

Department of Cariology and Comprehensive Care

New York University

137 East 25th Street, 6th Floor

New York, NY 10010

Email: Amy.Slep@NYU.edu

Phone [\(212\) 998-9815](tel:2129989815) --- NYU office

Phone [\(646\) 504-3874](tel:6465043874) --- All locations

Fax (212) 995-4780

Homepage www.ftrgroup.org

On Mon, Aug 1, 2016 at 11:02 AM, Kirsty Fawns <kfawns78@gmail.com> wrote:

Dear Dr Slep

I am writing to ask for permission to use the Parent Cognition Scale from your paper:

Snarr, J.D., Slep, A.M.S., & Grande, V.P. (2009). Validation of a new self-report measure of parental attributions. *Psychological Assessment*, 21(3), 390–401.

I am interested in using your questionnaire as part of my thesis project which is exploring the effectiveness of an evidence-based parenting programme (the Incredible Years parent training in reducing preschool behavioural problems), as well as the role of parental cognitions/characteristics in treatment engagement and attrition.

Please note I tried to contact Dr Jeffrey Snarr but was unable to obtain an email address that was valid for him.

I look forward to hearing from you.

Kind regards,

Kirsty Fawns

Trainee Clinical Psychologist

NHS Lothian/University of Edinburgh

Supervised by Dr Emily Taylor, Lecturer in Clinical Psychology

Permission from authors of Experiences in Close Relationships-Revised (ECR-R) Adult Attachment Questionnaire

– permission not required

Appendix 7. Participant information sheet



Participant Information Sheet The Incredible Years preschool programme

You are being invited to take part in a research study. Before you decide whether or not to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish. Contact us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

Parenting programmes help some people more than others. This study is trying to find out what makes the programme more effective.

Why have I been asked to take part?

All parents attending Incredible Years parenting groups are being invited to take part in the study.

Do I have to take part?

No, it is up to you to decide whether or not to take part. If you do decide to take part after reading this sheet, you will be asked to sign a consent form during the first week of the group.

If you decide to take part, you are still free to withdraw at any time and without giving a reason. Deciding not to take part or withdrawing from the study will not affect the service that you receive, or your legal rights.

If you withdraw from the study, we will use the data from the questionnaires you have already completed, unless you request that this is removed.

What will happen if I take part?

You will also be asked to complete five brief questionnaires during the first session of the group, and three questionnaires during the last session of the group. The questionnaires will be handed out in the group setting, and should take approximately 1 hour on the first occasion and 30 minutes on the second occasion. This study also involves collecting information about your attendance at the group, this information will be anonymised. Your participation in the study will end once the Incredible Years group has finished.

If you need help to read or write, or if English is not your first language, please let your group leader know so that we can help you complete the forms and questionnaires.

What are the possible benefits of taking part?

There may be no direct benefits for taking part in this study but the information gained from this study may help to improve the help offered to parents in the future.

What are the possible disadvantages and risks of taking part?

There are no risks in taking part. As above, completing the questionnaire may take up to 1 hour on the first occasion and 30 minutes on the second occasion. To help reduce the amount of time the shortest versions of the questionnaires have been used. You will be given time during the group to complete these questionnaires.

You may find completing these questionnaires about your parenting as intrusive. Please remember that the questionnaires are treated anonymously – we will not link your answers back to you.

What if there is a problem?

If you would like to discuss this study with someone independent of the study please contact:

Dr Helen Griffiths, Consultant Clinical Psychologist, School of Health in Social Science, University of Edinburgh

0131 650 3482

helen.griffiths@ed.ac.uk

If you wish to make a complaint about the study please contact the University of Edinburgh's Research Governance Team via email at: resgov@accord.scot

What happens when the study is finished?

All the information gathered will be anonymised so it will not be possible to provide individual feedback to families. A summary of the findings will be available for participants – please let us know if you would like a copy of this by indicating on the attached consent form.

Will my taking part in the study be kept confidential?

Yes. All the information we collect during the course of the research will be kept confidential and there are strict laws which safeguard your privacy at every stage. Your personal information will be removed from the questionnaires and destroyed so that you cannot be recognised. Your questionnaire response will be given a participant number so that any further questionnaires you complete can be matched up.

Your personal contact details will only be used to contact you if you are unable to attend the final session of the group, in order to be able to send you the

questionnaires, and if you wish to receive a copy of the summary of the results of this study. This personal data will be destroyed 3 months after the study is completed.

What will happen to the results of the study?

The results will be written up and submitted as part requirement of a Doctorate in Clinical Psychology. They may be submitted for publication in a scientific journal.

Who has reviewed the study?

The study proposal has been reviewed by the University of Edinburgh Clinical Psychology Department as part of a thesis proposal; the City of Edinburgh Council Communities and Families Department Ethics Committee; the West Lothian Council Social Policy Learning & Development Team; the Scottish Borders Council Early Years Team; and the University of Edinburgh Ethics Committee. All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee. A favourable ethical opinion has been obtained from the North West – Haydock Research Ethics Committee. NHS management approval has also been obtained.

If you have any further questions about the study please contact Kirsty Fawns on: 0131 537 6364 or email: k.fawns@sms.ed.ac.uk

Thank you for taking the time to read this information sheet.

Appendix 8. Consent form



Consent Form The Incredible Years preschool programme

Participant ID:
Contact details of principal researcher:

Kirsty Fawns
Trainee Clinical Psychologist
NHS Lothian CAMHS
Royal Edinburgh Hospital, Tipperlinn Road
Edinburgh
EH10 5HF

0131 537 6364
k.fawns@sms.ed.ac.uk

**Please
initial box**

1. I confirm that I have read and understand the information sheet (Effectiveness of IY Preschool Programme, Version 3, 02/06/2017) for the above study and have had the opportunity to consider the information and ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without the service I receive or legal rights being affected.
3. I understand that relevant sections of data collected during the study may be looked at by individuals from the regulatory authorities and from the Sponsor (the University of Edinburgh) where it is relevant to my taking part in this research. I give permission for those individuals to have access to my records.
4. I understand that if I do not attend the final session of the group the researcher will contact me to send the final questionnaires.
5. I would like to be sent a copy of the results from this study.
6. I agree to take part in the above study

Name of Participant

Date

Signature

Name of Person taking consent

Date

Signature

1x original – into Site File; 1x copy – to Participant

Appendix 9. Group leader information sheet



Group Leader Information Sheet The Incredible Years preschool programme

The following information sheet provides you with some details about a research study. This outlines why the research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish. Contact us if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

Parenting programmes help some people more than others. This study is trying to find out what makes the programme more effective.

Why have I been asked to take part?

All group leaders delivering the Incredible Years parenting groups are being invited to take part in the study. Parents/carers attending the Incredible Years parenting groups are also being invited to take part in the study.

You will be asked to give parents/carers an information sheet about this study at the home visit, prior to their attendance at the Incredible Years group. If they do not have a home visit you are asked to send them the information sheet in the post. The main researcher will meet with parents during week one of the group to provide them with a consent form and questionnaires. The main researcher will liaise with you as to when the most convenient time to do this will be.

This study also involves collecting information about the attendance of parents at the group, this information will be anonymised. This information will be collected from your local Psychology of Parenting Project Co-ordinator.

Do I have to take part?

No, it is up to you to decide whether or not to take part. If you do decide to take part after reading this sheet, you will be asked to complete a demographic questionnaire and a fidelity questionnaire during the course of the delivery of the Incredible Years group.

If you decide to take part, you are still free to withdraw at any time and without giving a reason. If you withdraw from the study, we will use the data from the questionnaires you have already completed, unless you request that this is removed.

What will happen if I take part?

You will be asked to complete a brief group leader demographic questionnaire and a fidelity questionnaire mid delivery of the group. These questionnaires will be emailed to you and should take approximately 20 minutes to complete in total. These questionnaires will be anonymised. Your participation in the study will end once the Incredible Years group has finished.

What are the possible benefits of taking part?

There may be no direct benefits for taking part in this study but the information gained from this study may help to improve the help offered to parents in the future. The fidelity questionnaire may also provide you with reminders as to how the programme developer intended the programme to be delivered. This may help you to reflect on your practice.

What are the possible disadvantages and risks of taking part?

There are no risks in taking part. As above, completing the questionnaire may take up to 20 minutes. Should parents have any queries regarding this study that you feel unable to answer then please ask them to contact the main researcher, Kirsty Fawns, contact details below.

You may find completing the fidelity questionnaires about your practice as intrusive. Please remember that the questionnaires are treated anonymously – we will not link your answers back to you.

What if there is a problem?

If you would like to discuss this study with someone independent of the study please contact:

Dr Helen Griffiths, Consultant Clinical Psychologist, School of Health in Social Science, University of Edinburgh
0131 650 3482

helen.griffiths@ed.ac.uk

If you wish to make a complaint about the study please contact the University of Edinburgh's Research Governance Team via email at: resgov@accord.scot

What happens when the study is finished?

All the information gathered will be anonymised so it will not be possible to provide individual feedback to group leaders or families. A summary of the findings will be available for group leaders and parents who participate. This information will be provided to you by email unless you request you do not wish to receive this.

Will my taking part in the study be kept confidential?

Yes. All the information we collect during the course of the research will be kept confidential and there are strict laws which safeguard your privacy at every stage.

Your personal information will be removed from the questionnaires and destroyed so that you cannot be recognised. Your questionnaire response will be given a number so that any further questionnaires you complete can be matched up. Your personal contact details will only be used to send you the questionnaires and a summary of the results of this study. This personal data will be destroyed 3 months after the study is completed.

What will happen to the results of the study?

The results will be written up and submitted as part requirement of a Doctorate in Clinical Psychology. They may be submitted for publication in a scientific journal.

Who has reviewed the study?

The study proposal has been reviewed by the University of Edinburgh Clinical Psychology Department as part of a thesis proposal; the City of Edinburgh Council Communities and Families Department Ethics Committee; the West Lothian Council Social Policy Learning & Development Team; the Scottish Borders Council Early Years Team; and the University of Edinburgh Ethics Committee. All research in the NHS is looked at by an independent group of people, called a Research Ethics Committee. A favourable ethical opinion has been obtained from the North West – Haydock Research Ethics Committee. NHS management approval has also been obtained.

If you have any further questions about the study please contact Kirsty Fawns on: 0131 537 6364 or email: k.fawns@sms.ed.ac.uk

Thank you for taking the time to read this information sheet.

Appendix 10. Parent demographic questionnaire

Effectiveness of IY Preschool Programme
Version 2, 02/06/2017

Questionnaire 2



Carer Demographic questionnaire

This questionnaire will be used to assess all participant's demographic factors.

This information will be anonymised and stored separately to your questionnaire responses.

1	Your name		
2	Your gender Please circle	Male	Female
3	Your relationship to the target child (the child you have come to group about)		
4	Your DOB (just month and year)	MM	YYYY
5	Your target child's DOB (just month and year)	MM	YYYY
6	Your target child's gender Please circle	Male	Female
7	Number of children in immediate family		
8	Marital or same-sex civil partnership status Please circle one option that best describes your status	1. single, that is, never married and never registered in a same-sex civil partnership 2. married 3. in a registered same-sex civil partnership 4. co-habiting 5. separated 6. divorced 7. widowed	
9	What is your ethnic group? Please circle one option that best describes your ethnic group or background	White 1. Scottish / British / English / Welsh / Northern Irish 2. Irish 3. Gypsy or Irish Traveller 4. Any other White background, please describe: <i>Mixed / Multiple ethnic groups</i> 5. White and Black Caribbean 6. White and Black African 7. White and Asian 8. Any other Mixed / Multiple ethnic background, please describe: <i>Asian / Asian British</i> 9. Indian 10. Pakistani 11. Bangladeshi 12. Chinese 13. Any other Asian background, please describe: <i>Black / African / Caribbean / Black British</i> 14. African 15. Caribbean 16. Any other Black / African / Caribbean background, please describe: <i>Other ethnic group</i> 17. Arab 18. Any other ethnic group, please describe:	

Appendix 11. Group leader demographic questionnaire



Group Leader Demographic questionnaire

This questionnaire will be used to assess all group leader's demographic factors. By completing this questionnaire you are providing consent for your responses to be used in this study. This information will be anonymised.

1	Your initials (first name and last name)	
2	Your gender Please circle	Male Female
3	Your job title	
4	Highest level of qualification you hold Please circle one option that best describes your	Doctorate Degree Master's Degree Bachelor's Degree Higher National Diploma Higher National Certificate SVQ – please specify level: Other, please describe:
5	Number of Incredible Years Groups you have delivered	
6	Experience (in years and months) Please specify	Training Child development Social learning theory Facilitating groups Other, please describe:
7	Type of experience (in years and months) Please specify	Children and families Child skills groups Parent therapies Parent training groups Family therapy Other, please describe:
8	What is your ethnic group? Please circle one option that best describes your ethnic group or background	<i>White</i> 1. Scottish / British / English / Welsh / Northern Irish 2. Irish 3. Gypsy or Irish Traveller 4. Any other White background, please describe: <i>Mixed / Multiple ethnic groups</i> 5. White and Black Caribbean 6. White and Black African 7. White and Asian 8. Any other Mixed / Multiple ethnic background, please describe: <i>Asian / Asian British</i> 9. Indian 10. Pakistani 11. Bangladeshi 12. Chinese 13. Any other Asian background, please describe: <i>Black / African / Caribbean / Black British</i> 14. African 15. Caribbean 16. Any other Black / African / Caribbean background, please describe: <i>Other ethnic group</i> 17. Arab 18. Any other ethnic group, please describe:

Appendix 12. Parent Group Leader Collaborative Process Checklist



Parent Group Leader Collaborative Process Checklist

This checklist is designed for group leaders to complete together following a session, or for a group leader to complete for him/herself when reviewing a video of a session. By watching the video of a session and looking for the following points, a leader can identify specific goals for progress. This checklist is designed to complement the checklist for the specific session, which lists the key content that should be covered.

Leader Self-Evaluation (name): _____

Co-leader Evaluation: _____

Certified Trainer/Mentor Evaluation: _____

Date: _____

Session Topic: _____

SET UP

Did the Leader(s):

YES NO N/A

1. Set up chairs in a semicircle that allowed everyone to see the TV? (Avoid tables.) _____
2. Sit at separate places in the circle, rather than both at the front? _____
3. Write the agenda on the board? _____
4. Have last week's home activities ready for the parents to pick up, complete with praise and encouragement written on them? _____
5. Plan and prepare for daycare in advance? _____
6. Prepare and lay out the food, in an attractive manner? _____
7. Make calls to parents during the week? _____
8. Keep home activity check in limited to 20-30 minutes? _____

REVIEW PARENT'S HOME ACTIVITIES

Did the Leader(s):

9. Praise and reward parents' efforts to do home practice activities and readings?

1 Never 2 Rarely 3 Sometimes 4 Frequently 5 Very Frequently

10. Give every parent the chance to talk about his/her week?

1 Never 2 Rarely 3 Sometimes 4 Frequently 5 Very Frequently

11. Praise and encourage parents for what they did well and recognize their beginning steps at change, rather than correct their process?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

12. Highlight key “principles” that parents’ examples illustrate? (e.g., write them on flip chart or paraphrase idea.)

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

13. Explore with individuals who didn’t complete the home activities what made it difficult (barriers) and discuss how they might adapt home activities to fit their needs and goals?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

14. Ask about and encourage “buddy calls” and explore barriers to calls and solutions?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

15. If a parent’s description of how they applied the skills makes it clear that s/he misunderstood, did the leaders accept responsibility for the misunderstanding rather than leaving the parent feeling responsible for the failure? (e.g., “I’m really glad you shared that, because I see I completely forgot to tell you a really important point last week. You couldn’t possibly have known, but when you do that, it’s important to...” vs “You misunderstood the assignment. Remember, when you do that, it’s important to...”)

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

16. Make sure that the discussion is brought back to the specific topic at hand after a reasonable time without letting free flowing discussion of other issues dominate?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

17. Use home practice experiences as an opportunity to set up role play demonstrations?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

WHEN BEGINNING THE TOPIC FOR THE DAY*Did the Leader(s):*

18. Begin the discussion of the topic with open-ended questions to get parents to think about the importance of the topic?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

19. Do the benefits and/or barriers exercise regarding the new topic or to explore difficulties with previously taught strategies?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

20. Paraphrase and highlight the points made by parents - write key points on the board with their name?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

WHEN SHOWING THE VIGNETTES*Did the Leader(s):*

Number of vignettes shown in session: _____

21. Focus parents on what they are about to see on the vignettes and what to look for?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

22. Begin by asking an open-ended question about what parents thought was effective/ ineffective in the vignette?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

23. Acknowledge responses one or more parents have to a vignette?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

24. Paraphrase and highlight the points made by parents - writing key points on the board?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

25. Move on to the next vignettes after key points have been discussed, rather than let the discussion go on at length?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

26. Use vignettes to trigger appropriate discussions and/or practices?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

27. Redirect group to the relevance of principles learned from the interaction on the vignette for their own situations with their children?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

28. Refer to parents' goals for themselves and their children when discussing vignettes and learning principles?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

29. Get parents to switch from talking about strategies in general to using the actual words they could actually use? (e.g., from "She should be more specific" to "You [Participant] could say, John, you need to put the puzzle pieces in the box.")

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

PRACTICE AND ROLE PLAYS

Did the Leader(s):

30. Ensure that the skill to be practiced has been covered in the vignettes or discussion prior to asking someone to role play it. (This ensures the likelihood of success.)

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

31. Uses both spontaneous and planned role play practice over the course of the session?

Number of role plays: _____

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

32. Do role plays in pairs or small groups that allow multiple people to practice simultaneously?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

33. Use all of the following skills when directing role plays:

a. Skillfully get parents engaged and motivated to do role play practices?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

b. Strategically select parents and clearly describe their parent role?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

c. Provide "child" in role with a description of his/her age, developmental stage, and level of misbehavior?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

d. Provide enough "scaffolding" so that parents are successful in their role as "parent" (e.g., get other parents to generate ideas for how to handle the situation before practice begins)?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

e. Invite other workshop members to be "coaches" (call out idea if the actor is stuck)?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

f. Pause/freeze role play periodically to redirect, give clarification, or reinforce participants?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

g. Take responsibility for having given poor instructions if role play is not successful and allow actor to rewind and replay?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

34. Process role playing afterwards by asking how "parent" felt and asking group to give feedback?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

35. Process role play by asking how "child" felt in role?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

36. Solicit feedback from group about strengths of parent in role?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

37. Offer detailed descriptive praise of the role play and what was learned?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

38. Re-run role play, changing roles or involving different parents (not always needed, but helpful to do for a parent who needs modeling by someone else first)?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

LEADER GROUP PROCESS SKILLS

Did the Leader(s):

39. Build rapport with each member of group?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

40. Encourage everyone to participate?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

41. Use open-ended questions to facilitate discussion?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

42. Reinforce parents' ideas and foster parents' self-learning?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

43. Encourage parents to problem-solve when possible?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

44. Foster idea that parents will learn from each others' experiences?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

45. Help parents learn how to support and reinforce each other (celebrate each other's successes)?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

46. View every member of group as equally important and valued?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

47. Identify each family's strengths?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

48. Create a feeling of safety among group members?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

49. Create an atmosphere where parents feel they are decision-makers and discussion and debate are paramount?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

ENDING GROUP - REVIEW & HOME ACTIVITIES*Did the Leader(s):*

50. Begin the ending process with about 15 minutes remaining?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

51. Summarize this session's learning? (One way to do this is to review or have the parents review each point on refrigerator notes out loud.)

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

52. Review or have parents review the home activity sheet, including why it is important, and how they will try to do it?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

53. Talk about any adaptations to the home activity for particular families?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

54. Show support and acceptance if parents can't commit to all the home activities? (Support realistic plans.)

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

55. Have parents complete the Self-Monitoring Checklist and commit to goals for the week?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

56. Check in on buddy calls?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

57. Have parents complete the evaluation form?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

58. End the session on time?

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

The goal in the group sessions should be to draw from the parents the information and ideas to teach each other. They should be the ones who generate the principles, describe the significance, highlight what was effective and ineffective on the video, and demonstrate how to implement the skills in different situations. Remember, people are far more likely to put into practice what they talk about than what they hear about. (Webster-Stratton)

Summary Comments:

Appendix 13. Instructions for Authors

The guidelines below were accessed 27th April 2018 from https://www.springer.com/psychology/child+%26+school+psychology/journal/10826?detailsPage=pltc_i_727106.

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Journal of Child and Family Studies

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Appendix 14. Glossary of Terms

Attachment	<ul style="list-style-type: none"> - According to attachment theory, an adult's childhood experiences with their primary caregiver can shape their mental representations of close relationships; in other words, their expectations for and behaviour in other close relationships such as with their own children (Bowlby 1988; Crittenden and Ainsworth 1989). - Attachment behaviours are interpersonal actions that help to increase an individual's sense of security, especially in times of stress or need. - These interpersonal patterns are considered to be reasonably stable and, in adulthood, are known as adult attachment styles. - Securely attached individuals are considered available, sensitive, and responsive, as such they are able to get close to and depend on others and do not worry about abandonment.
Attachment Insecurity	<ul style="list-style-type: none"> - There are two dimensions of attachment insecurity: anxiety and avoidance. - Low scores on both dimensions of attachment insecurity indicate attachment security. - Anxiously/ambivalently attached individuals desire extreme closeness, worry that their partners do not really love them, and fear abandonment. - Whereas, avoidantly attached individuals are uncomfortable with closeness and dependency in relationships, often devalue relationships, and find it difficult to trust and depend on others.
Attribution Theory	<ul style="list-style-type: none"> - See Parental Attributions below.
Cognitive Self Consciousness subscale	<ul style="list-style-type: none"> - 6 questions from the Metacognitions Questionnaire (MCQ-30; Wells and Cartwright-Hatton 2004) to assess a parent's tendency to focus attention on thought processes.
Child externalising behavioural problems	<ul style="list-style-type: none"> - Aggression, noncompliance, defiance, oppositional behaviour (often called 'conduct problems').
Coercion Theory	<ul style="list-style-type: none"> - Patterson's (1982) theory where parent-child interactions inadvertently contribute to the development or maintenance of child conduct problems (Pearl 2009).

The Incredible Years Preschool parenting programme	<ul style="list-style-type: none"> - The Preschool Basic parenting program aims to improve parent-child interactions, reduce harsh discipline and support parents' to help their children develop language, social and emotional skills. - Delivered in a group format, over a period of 14 weeks, approximately 2-hours per session.
Mediator	<ul style="list-style-type: none"> - A variable that can explain the relationship between an independent variable and a dependent variable.
Metacognition	<ul style="list-style-type: none"> - Involves "thinking about thinking". - "Metacognition refers to the psychological structures, knowledge, events, and processes which are involved in the control, modification, and interpretation of thinking itself" (Wells and Cartwright-Hatton 2004, p. 386).
Moderator	<ul style="list-style-type: none"> - A variable that "affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable" (Baron and Kenny 1986, p. 1174).
Parental attributions	<ul style="list-style-type: none"> - How parents make sense of or understand their child's behaviour. This includes their beliefs about the cause of such behaviour. A key element of attribution theory is that people interpret each other's behaviour along basic dimensions of stability (stable/permanent–unstable/transient), locus (internal–external), and controllability (controllable–uncontrollable) (Weiner 1995).
Parental self-efficacy	<ul style="list-style-type: none"> - A parent or caregiver's confidence in their role to successfully raise children (Jones and Prinz 2005; Wittkowski et al. 2017).
Parental stress	<ul style="list-style-type: none"> - Stress associated with parenting and the parent–child relationship.
Parent management training programmes	<ul style="list-style-type: none"> - Manualized, often delivered in a group format, short-term interventions that support parents to develop positive relationships with their children and to manage aggression and other discipline problems. - Can be both prevention and treatment interventions for children with externalising behaviour problems or at-risk of developing conduct problems (e.g., Webster-Stratton 1998; Webster-Stratton et al. 2001).

Premature drop out	<ul style="list-style-type: none"> - Those participants who either inform group leaders that they will no longer be attending the group before completing all sessions or those families who do not specifically articulate they will no longer be attending but do not return to the group after missing a number of sessions (Miller and Prinz 2003). - For the purpose of this study, completers are defined as those who complete at least half of the sessions (7 sessions), whereas premature drop out is defined as those who miss 7 or more sessions.
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